

Section 6
Surface Water

SURFACE WATER

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6.0 Surface Water

The Bannister Federal Complex is bordered on the east by the northward flowing Blue River and on the south by Indian Creek, a tributary to the Blue River. Indian Creek and the Blue River lie in Johnson County, Kansas and Jackson County, Missouri, with portions of each body of water occurring in each of the two states. Indian Creek, a fourth-order stream originating in Kansas, flows 37.8 km in an east north easterly direction, before emptying into the Blue River approximately 4.8 km east of the Missouri border. Even though the first 7.9 km of Indian Creek have intermittent flow (Jeffries et al. 1993), it remains the single largest contributor of flow to the Blue River. At 80 km², the Indian Creek watershed is the largest sub-basin of the 435 km² Blue River basin. The Blue River, which also originates in Kansas, is a fifth-order stream, 65.5 km in length, and flows north northeast before emptying into the Missouri River. Though 80% of the river lies in Missouri, lands in Kansas make up the majority (60%) of its watershed. The southeastern tip of Wyandotte County, Kansas, and the northwest corner of Cass County, Missouri, also contain tributaries that feed into the Blue River.

The Blue River basin is bisected by two subdivisions of the Central Lowland region of Missouri; the unglaciated Osage Plains, and the glaciated Dissected Till Plains. This interface represents the southern-most movement and eventual retreat of glaciation, of the Kansan period, which took place about 400,000 years ago (Johnson 1987). As is typical of a glaciated topography, the Dissected Till Plains have been characterized as “a nearly flat till plain” (Fenneman 1938), and the Osage Plains have been described by Pflieger (1971), in reference to Missouri, as “one of the smoothest regions in the state”. Nonetheless, it is fair to characterize the Blue River basin as having a rolling topography, with land surface elevations in the drainage varying from 213 to 346 m (Jeffries et al. 1993).

Both Indian Creek and the Blue River have been substantially altered by channelization and urbanization within their watersheds. Near the Bannister Federal Complex alone, nearly 800 m of Indian Creek and 3.5 km of the Blue River have been lost because of channelization (Korte and Stites 1998). Channelization projects near the KCP occurred a number of times from 1953 to 1972, in order to accommodate construction of railroad

tracks, highways, landfills, and flood-control levees. These efforts created reaches alongside the KCP that have broad, shallow channels and steep, muddy banks, virtually devoid of woody riparian vegetation and natural structure. Urbanization, wetland destruction, low gradient (0.76 m/km for Blue River), and silty, clay soils that percolate slowly cause lower Indian Creek and the Blue River adjacent to the KCP to experience vast and rapid fluctuations in water level during precipitation events. Runoff within the Blue River basin has been described as ranging anywhere from moderately slow to very rapid, depending on soil type and extent of development (Jeffries et al. 1993). Average annual runoff is about 18 cm (Jeffries et al. 1993). Average annual precipitation is 91 cm (Johnson 1987, MDNR 1986).

The obvious degradation of habitat caused by channelization can largely be attributed to the general lack of streambed diversity and structure, lack of aquatic and riparian vegetation, and congruent increases in erosion, turbidity, and siltation. To better grasp the effects of channelization on aquatic habitat, consider Korte and Stites (1998) comparison of an upper, unchannelized Blue River reach (downstream of the I-435 bridge) to that of a channelized reach alongside the KCP:

Unchannelized: bank = 50% trees, 40% grasses & weeds, 10% gravel bar, streambed = 10% silt or mud, 40% gravel, 50% cobble. Flood plain and banks forested by mature sycamores and cottonwoods. Banks stabilized by vegetation with little or no evidence of erosion. River characterized by sequences of riffles, pools, and runs. Adequate bottom structure and aquatic macrophytes are present.

Channelized: bank = 40% grasses & weeds, 40% rip rap, 20% bare ground, streambed = 70% silt or clay, 30% rip rap. Exposed mud banks, or banks stabilized by rip rap. Channel is broad and shallow. Bed covered with unstable fine-grained sediment.

The adverse effects of channelization on these aquatic habitats are exacerbated by geography. The Blue River basin lies within the Prairie Faunal Region, an area characterized by a less-varied fish fauna than other faunal regions in Missouri. This results because prairie streams are subject to widely fluctuating environmental conditions, and only fishes tolerant of these conditions can persist (Pflieger 1975). Because of these highly fluctuating conditions, a case can be made for other regional fauna being less varied as well, including benthic macroinvertebrates, and aquatic-

associated herpetofauna. For example, few unique amphibians occur in the Jackson County area (Johnson 1987); most are either fairly widespread throughout the state, or they have a distribution confined to the Missouri River Flood plain.

Land use in the Blue River basin can be characterized by a shift away from rural/crop land agriculture to residential-commercial development/livestock grazing. Twenty-five years ago the upper basin was largely rural, but it has since undergone rapid commercial and residential expansion. Concurrently, agricultural practices in the area have shifted away from intensive cropping to greater use of land for pasture and livestock grazing (Jeffries et al. 1993). In the late 1970s, the U. S. Fish and Wildlife Service (USFWS 1986) calculated surrounding land use for the Blue River as 40% grassland, 35% cultivated, 15% housing, and 10% industrial. Land surrounding Indian Creek was identified as 50% urban development, 24% cultivated, 14% grassland, 8% timber, and 4% industrial. Residential and commercial development has continued since this survey, fueled largely by the rapidly expanding population in Kansas.

Waste Water Treatment Plant Flow Impact

Additional information related to overall water quality within the Blue River basin is detailed in the USGS publication *Water Quality in the Blue River Basin, Kansas City Metropolitan Area, Missouri and Kansas, July 1998 to October 2004* (Wilkison 2006). The following discussion related to Waste Water Treatment Plan flow is from the above report:

Wastewater-treatment plant effluent often is an important hydrologic component of a number of streams in the Kansas City metropolitan area. During base flow, the majority of streamflow is often comprised of effluents at sites downstream from WWTP discharges (Wilkison and others, 2002; Lee and others, 2005). Because populations continue to rapidly grow in the upper basin, WWTPs inputs to basin streams also are expected to increase. Increases to the capacity of two WWTPs in the basin (Blue River and Tomahawk) are planned or under consideration. Therefore, an understanding of the role that WWTPs play in stream hydrology is important, especially in light of their impact on water-quality.

The three WWTPs noted in Table 6.1 are located in the upper parts of the Blue River Basin discharge into the Blue River, or its tributaries and are located upstream of the Bannister Federal Complex. These plants are permitted under state and federal statutes to process wastewater from residents of Johnson County, Kansas, and discharge effluent into receiving streams. Because the original source of the water is from outside the Blue River

Table 6.1 Locations and details of major publicly-owned treatment works (POTWs) in the Blue River watershed upstream of the Kansas City Plant. Information obtained from the U. S. EPA database on permit compliance within the Envirofacts system (<http://www.epa.gov/enviro/html/water.html#PCS>)

	<i>Blue River SSD#1 WWTP</i>	<i>Johnson County Tomohawk Creek WWTP</i>	<i>Johnson County Indian Creek Middle Basin WWTP</i>
Location:	Stanley	Leawood	Overland Park
town	Johnson	Johnson	Johnson
county			
Discharge point (approx. stream km)	BLK 50	INK 7	INK 19
NPDES Permit #	KS0079910	KS0055484	KS0119601
Daily Discharge, mgd (mean monthly)	2.00 ±0.19 N=10	5.83±0.92 N=12	11.25±1.02 N=10

Basin (the Kansas River), the net effect is an interbasin transfer of water. Water originates outside the Blue River Basin, is treated and used by businesses and homeowners, transferred to a wastewater-treatment facility, and ultimately discharged into another basin. This process has altered the hydrologic regime of much of the Blue River. The percent exceedance values of mean daily streamflow for the Blue River at the USGS gauging station immediately downstream from the confluence of Indian Creek and the Blue River from 1939 to 1955, 1956 to 1981, and 1982 to 2003 is shown in Figure 6.1. These time periods represent when there was no wastewater effluent discharged into the stream above this site, a time period in which one plant discharged into the stream, and a time period in which three plants discharged into the stream. Since 1955, the

median daily streamflow at this gauging station increased 29 ft³/s (cubic feet per second) which is nearly equivalent to the sum of the discharges from these three plants (28.2 ft³/s; fig. 14). Effluent effects on the discharge to the Blue River were more pronounced during drought periods (mid-2002 through mid-2003) because Indian Creek contributed a larger percentage of flow to the overall Blue River flow. More than 40 percent of the time from August 1998 through October 2004, WWTP effluent constituted more than 95 percent of the discharge at this gauging station.

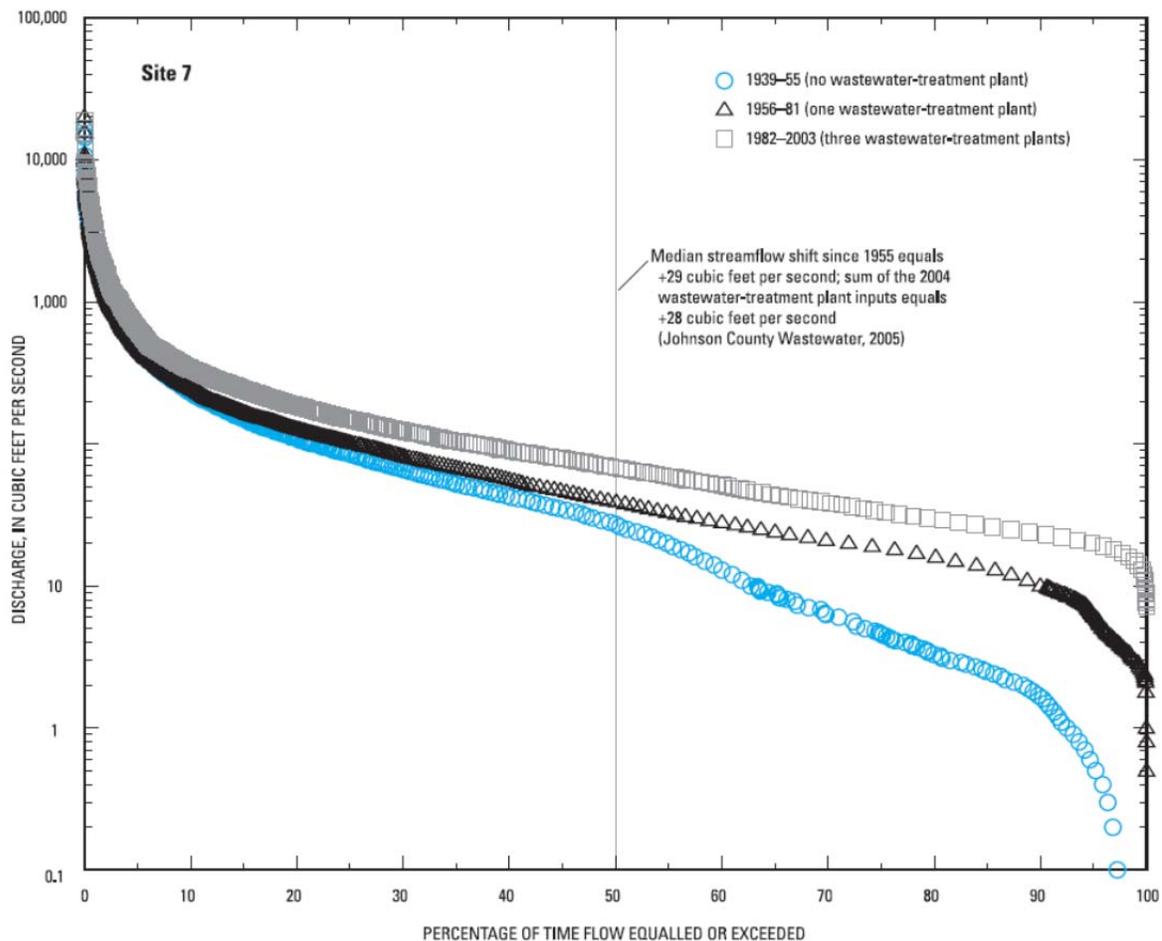


Figure 6.1 - Increases in discharge for the Blue River near Kansas City for time periods with no, one, and three wastewater treatment plants.

6.1 Regulatory Status of Blue River and Indian Creek

The Blue River and Indian Creek are designated as “Metropolitan No Discharge Streams” under Missouri State regulations (10 CSR 20-7.031, Table F; MCSR 1999). Only

uncontaminated cooling water, permitted storm water discharges in compliance with permit conditions, and excess wet-weather bypass discharges not interfering with beneficial uses may be discharged to the watersheds of these streams. The KCP is authorized under its NPDES permit to discharge single pass non-contact cooling water and rain event run-off through four permitted outfalls.

Streams in Missouri are classified by flow characteristics defined under state regulations (10 CSR 20-7.031(1)(F); MCSR 2012) and by designated uses defined in Table H (10 CSR 20-7.031; MCSR 2012) “Stream Classifications and Use Designations”. The following classifications and designated uses apply to surface waters bordering the KCP:

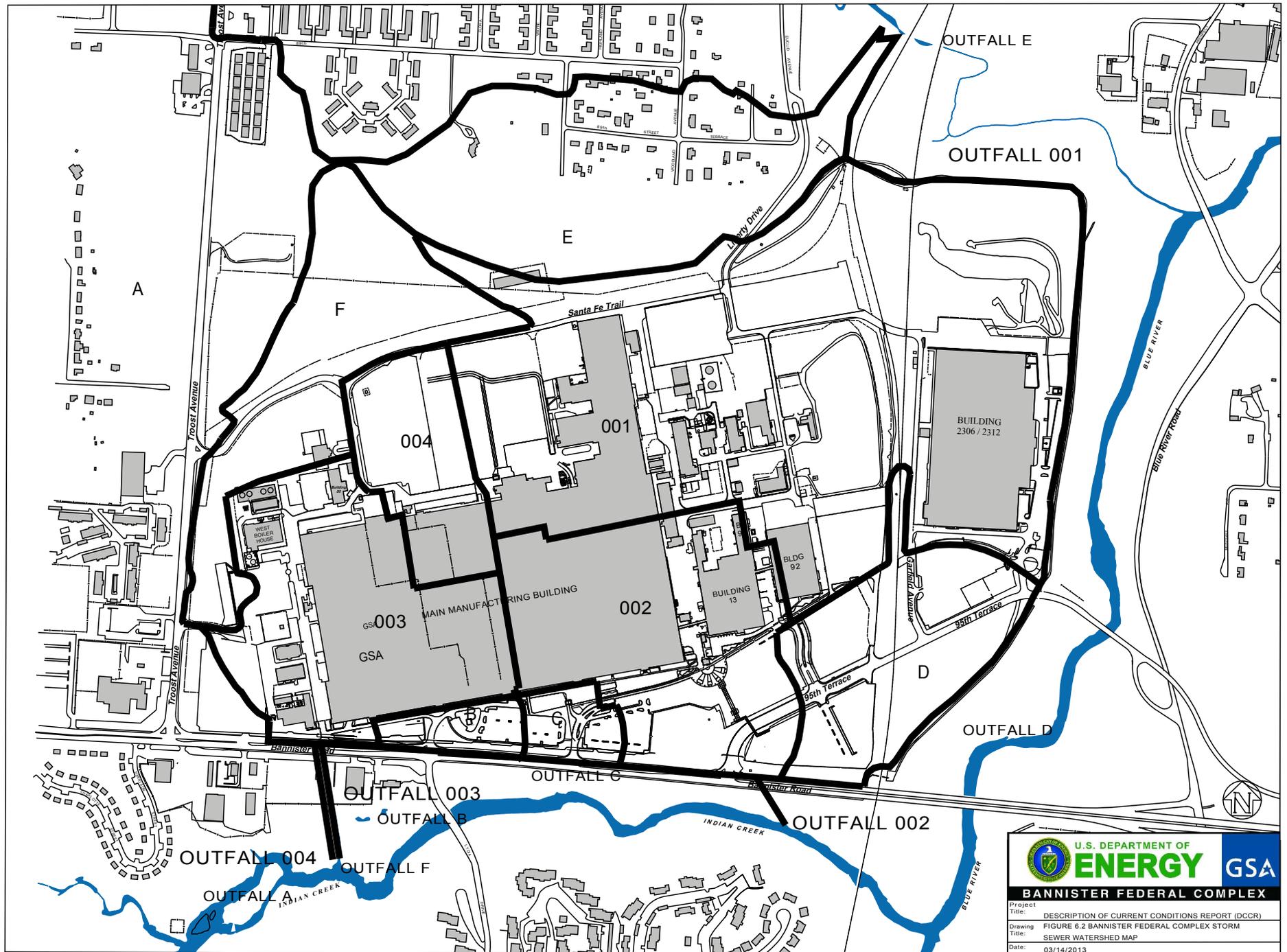
The reach of the Blue River bordering the KCP is a Class P stream, meaning permanent flow is maintained even in drought periods. Designated uses are: AQL - protection of warm water aquatic life, human health / fish consumption; WBC - whole body contact recreation; LWW – livestock & wildlife watering; and BTG - boating and canoeing.

The reach of Indian Creek bordering the KCP is a Class C stream, meaning flows may cease in dry periods but permanent pools are maintained, which support aquatic life. Designated uses are: AQL; WBC; LWW; and IND - industrial.

Instream water quality standards applicable to a particular stream reach are determined by 10 CSR 20-7.031, Table A , “Criteria for Designated Uses”(MCSR 2012), which provides parameter specific instream standards listed under the applicable “Designated Use” column.

6.2 Bannister Federal Complex Storm Water

Storm water is drained from the Bannister Federal Complex through several storm sewer systems. Historically, storm water discharges associated with industrial portions of the complex have been regulated under a National Pollutant Discharge Elimination System (NPDES) permit. There are four regulated outfalls associated with industrial activities at the complex and these outfalls are designated as outfalls 001, 002, 003, and 004. There are six unregulated outfalls at the complex that receive storm water run-off from parking lots and vegetated areas and these outfalls are designated by alpha characters. Figure 6.2 depicts the drainage areas for each of the outfall systems for the Bannister Federal Complex.



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	BANNISTER FEDERAL COMPLEX		
Project:	DESCRIPTION OF CURRENT CONDITIONS REPORT (DCCR)		
Drawing:	FIGURE 6.2 BANNISTER FEDERAL COMPLEX STORM		
Title:	SEWER WATERSHED MAP		
Date:	03/14/2013		

6.3 NPDES Permit chronology

- 1974 - NPDES permit administered by EPA. Required a compliance schedule to eliminate industrial wastewater discharges from discharging to Blue River and Indian Creek via the storm sewer system. No PCB discharge limit or monitoring required.
- 4/16/82 – Missouri Department of Natural Resources (MDNR) Missouri State Operating Permit (MSOP) MO-0004863 issued. Prohibited discharge of PCBs.
- 10/5/84 - Abatement Order 00386 issued, requiring the KCP to limit PCB discharges to 1 µg/L on a monthly average by 7/31/85. Corrective Action plan submittal required.
- 6/12/85 - Compliance timeframe in Abatement Order 00386 appealed - Corrective Actions did not result in compliance with 1 µg/L PCB limit - proposes to meet 1 µg/L PCB limit by 12/31/86.
- 7/10/85 - Stipulation for modification of Abatement Order allowed until 12/31/86 to meet PCB limit. Further investigations and corrective actions required.
- 7/17/87 - MSOP #MO-0004863 renewed, limiting PCB discharges to a 1 µg/L monthly average.
- 11/5/99 – MSOP #MO-0004863 renewed, limiting PCB discharges to 1 µg/L until November 2002 and then 0.5 µg/L as a final daily limit.
- 10/1/12 - MSOP #MO-0004863 renewed. PCB discharges are effectively limited to 0.5 µg/L. The PCB water quality standard of 0.000045 µg/L is referenced, however, since this level cannot be quantified the PCB discharge limit is effectively enforced at 0.5 µg/L.

6.4 Storm Water / SWMU Impacts

Storm water piping is typically not constructed / installed to function as a water tight conduit. Infiltration / exfiltration can occur at pipe joints and service connections.

Therefore, it possible for contaminants associated with adjacent soils and groundwater to infiltrate and contaminate storm water flowing within the piping system. Previous RFIs have documented the occurrence of contaminant migration associated with SWMUs into the storm water system. Numerous investigations and related corrective actions have been implemented to address the occurrence of contaminants in storm water discharges that are associated with SWMUs at the BFC. Additional information related to the

occurrence of contaminants in storm water associated with historic spills / releases is provided elsewhere in this report under the appropriate release site heading. A general overview is provided below.

Historically, the discharge of PCBs through Outfall 002 has been a compliance issue for the plant. Since 1982, the NPDES or MSOP permit has prohibited any release of PCBs above the quantification level of one part per billion (ppb) on a monthly average. The MSOP permit was reissued in 1999 with a daily maximum interim PCB limit of one ppb with a final PCB discharge limit of 0.5 micrograms per liter ($\mu\text{g/L}$) effective November 2002. The MSOP reissued in 2012 references the PCB water quality standard of 0.000045 $\mu\text{g/L}$, however, since this level cannot be quantified the PCB discharge limit is effectively enforced at 0.5 $\mu\text{g/L}$. Weekly sampling for PCBs is required at each of the four regulated outfalls.

Each of the four regulated outfalls has been impacted by remnant solvent contamination associated with historic operations. The MSOP requires quarterly monitoring for Trichloroethylene (TCE) and its biodegradation products 1,2-dichloroethylene (1,2-DCE) and vinyl chloride. Figures 6.3 - 6.6 provide historic trend graphs for these contaminants. These compounds are typically detected at levels less than 10 $\mu\text{g/L}$. The applicable designated use (human health protection - fish consumption) and associated standard from Table A of 10 CSR 20.7.031 (MCSR 2012) notes the in-stream water quality standard for TCE is 80 $\mu\text{g/L}$, the standard for 1,2-DCE (trans) is 140,000 $\mu\text{g/L}$, and the vinyl chloride standard is 525 $\mu\text{g/L}$. As depicted in the trend graphs provided for each outfall (Figures 6.3 – 6.6) concentrations of the above compounds in stormwater discharges from the BFC are well below the associated water quality standard.

Generally, Outfall 001 has been impacted by PCBs associated with the D/27 Outside Area (SWMU 30) and solvents associated with the Old Ponds (SWMU 6). Outfall 002 has been impacted by PCBs associated with D/26 Outside and D/26 Inside (SWMUs 12 and 31). Outfall 003 has been impacted by PCBs associated with an electrical transformer oil spill (GSA 2008) and solvents to a lesser degree associated with Building

50 (SWMU 45). Likewise Outfall 004 detects low levels of VOCs associated with Bldg 50 and does not typically detect PCBs.

The following sections provide an overview of the occurrence of legacy contamination in storm water discharges from the BFC.

6.5 Surface Water Monitoring

The KCP discharges HVAC condensate, fire protection water test flows and rain event run-off, through four NPDES permitted outfalls (Missouri State Operating Permit # MO-0004863). This permit requires weekly monitoring of the four permitted outfalls. In addition, Special Permit Condition III.A.5. of the Post Closure Permit requires surface water monitoring to be conducted concurrently with the first semi-annual groundwater sampling event. Figure 5.1 depicts locations of the surface water and outfall sampling locations. Special Permit Condition III.A.4. of the Post Closure Permit requires development of a comprehensive monitoring plan to sample for VOCs and PCBs associated with water discharged from Outfall 002. Weekly sampling for PCBs and VOCs at the Outfall 002 flap gate location is currently required under the Post Closure Permit. The 95th Terrace Corrective Measures Study (CMS) also requires semi-annual monitoring of outfalls and surface water for PCBs analyzed by EPA Method 1668a. The above requirements (annual surface water monitoring and Outfall 002 monitoring) are addressed in Appendix F, of the Sampling and Analysis Plan (DOE 2008). Surface water monitoring data collected during calendar 2012 concurrently from the four permitted outfalls and six surface water monitoring sites is discussed in the following sections.

6.5.1 Outfalls / Receiving Streams

As required by Appendix F of the Sampling and Analysis Plan, annual sampling of the four regulated outfalls and six surface water sites was conducted concurrent with the 2012 first semi-annual groundwater sampling event. The purpose of this sampling is to characterize the effect stormwater discharges from the KCP have on receiving streams.

As required by the KCP's NPDES permit, all data presented in the following sections have been previously provided to the MDNR Water Pollution Control Division.

Correlations between groundwater and surface water monitoring results are discussed in the following text.

Semi-Annual groundwater sampling was conducted April / May 2012, during which the four regulated stormwater outfalls and six surface water sites were sampled (Figure 6.7). The list of parameters analyzed is consistent with those outlined under Section 2.1.2, Appendix F of the Sampling and Analysis Plan and results are provided on Table 6.2. Values listed under the *Surface Water Standard* column of Table 5.1 are taken from 10 CSR 20-7.031 Table A, *Criteria for Designated Uses (MCSR, 2012)* that are applicable to streams bordering the KCP. Analytical results from samples collected from the six surface water monitoring sites were below the surface water quality standards (reference Table 6.2).

VOCs

Groundwater contaminated with VOCs impacts stormwater discharges from the KCP to a minor degree. With the exception of Outfall 001, groundwater infiltration rates are generally less than 5 gpm in each outfall. As discussed below, the majority of groundwater that infiltrates into Outfall 001 is captured and routed to the groundwater treatment system. The occurrence of VOCs in stormwater discharges was noted on the occasions listed in Table 6.3 during 2012. All results were below drinking water standards. The KCP's NPDES Permit requires quarterly monitoring for TCE, 1,2-DCE, and vinyl chloride (chloroethene). There are no discharge limits. A "notification limit" of 100 µg/L is established under the permit. While "notification" has not been made as none of these parameters has exceeded 100 µg/L, these results are included with quarterly reports submitted to the MDNR Water Pollution Control Division. Results were within the historic range for each outfall.

6.5.1.1 Outfall 001

Historically, Outfall 001 has routinely detected VOCs. The occurrence of VOCs in Outfall 001 is associated with SWMUs 6 (Old Ponds) and 7 (North Lagoon Trench Area). See Sections 11 and 12 where the occurrence of VOCs associated with the above SWMUs is discussed. Past Interim Measures to address the occurrence of VOCs in Outfall 001 included the installation of a groundwater collection system to prevent the

Figure 6.3

OF001

Concentrations, ug/L

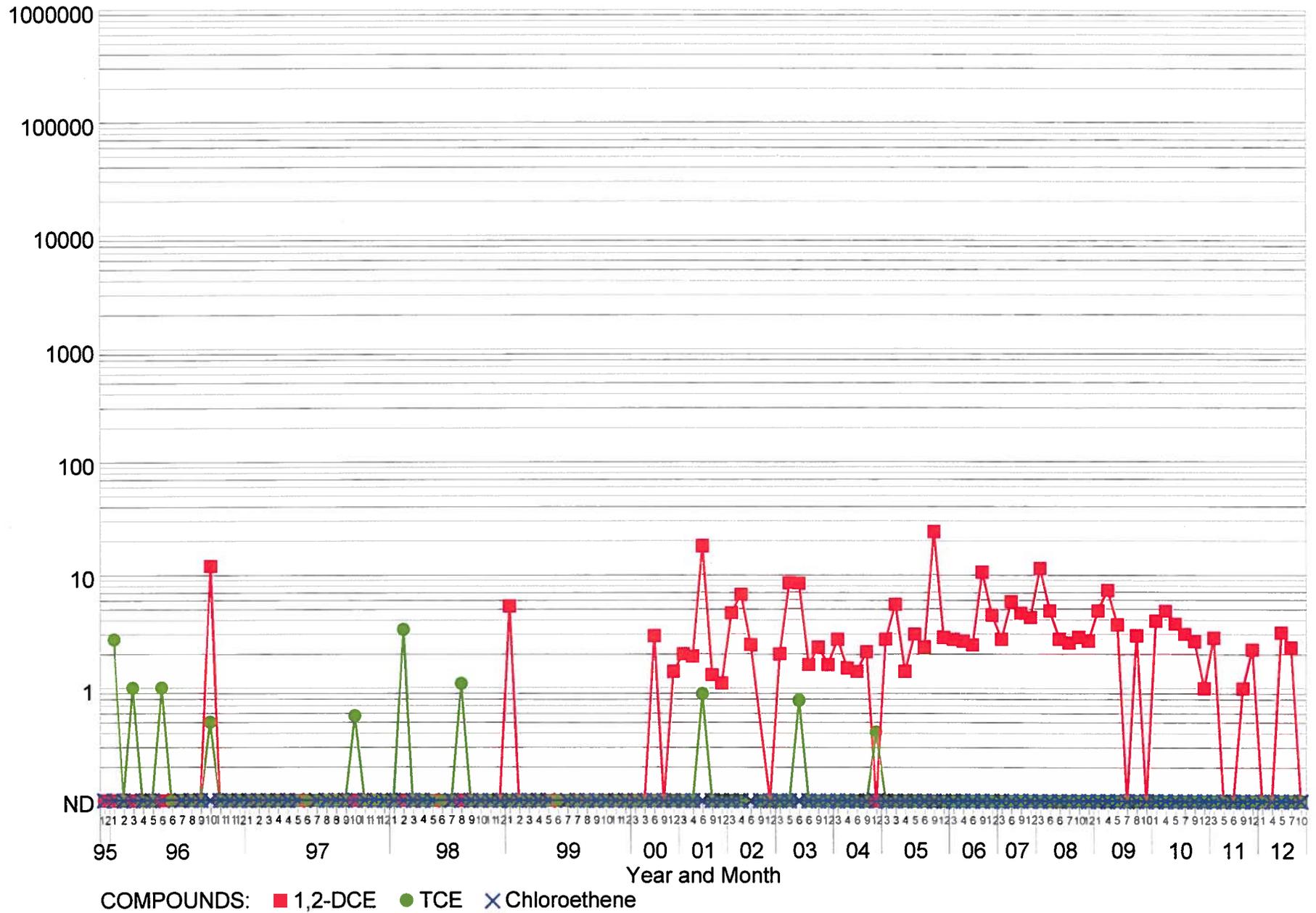


Figure 6.4

OF002

Concentrations, ug/L

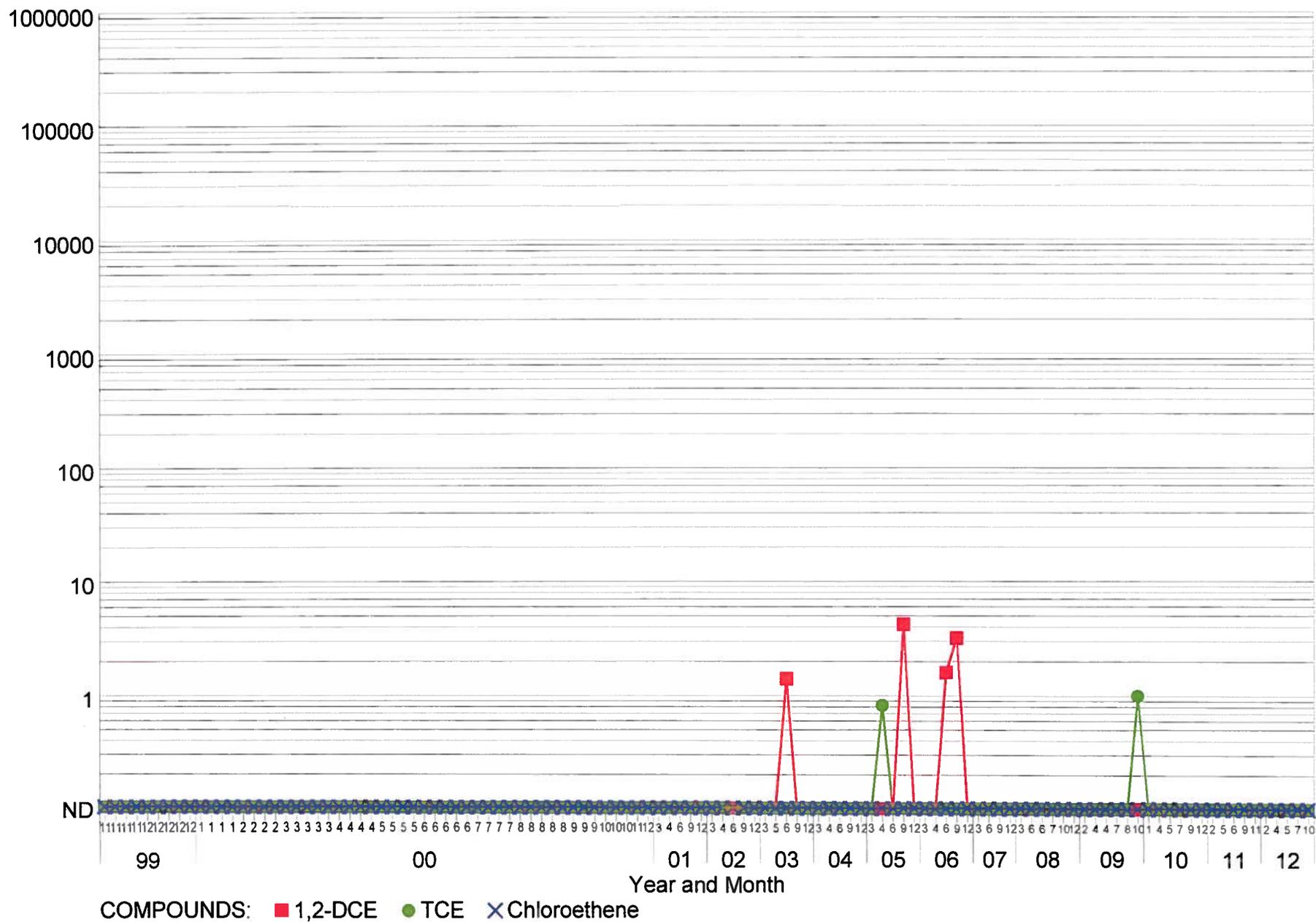


Figure 6.5

OF003 Concentrations, ug/L

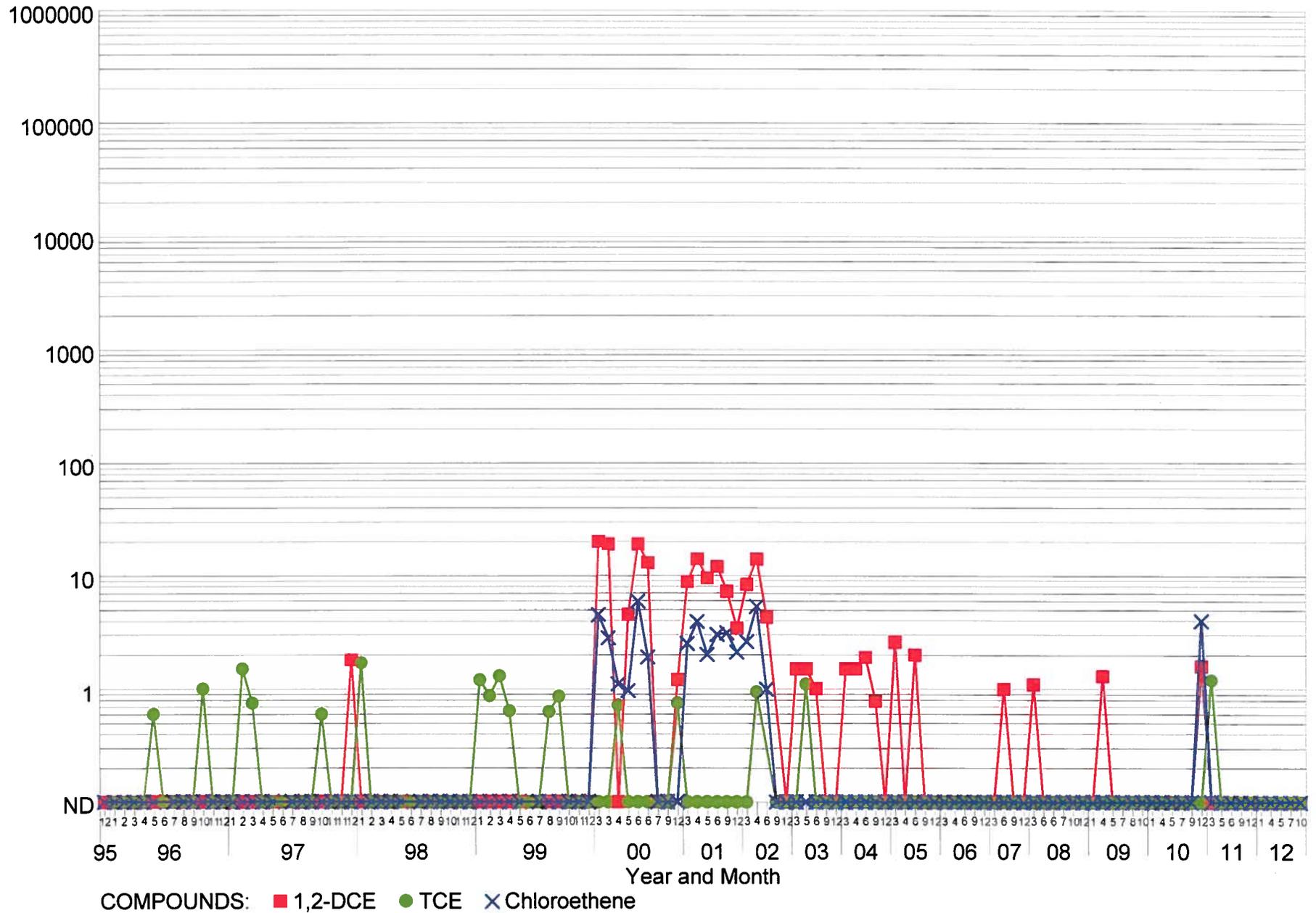
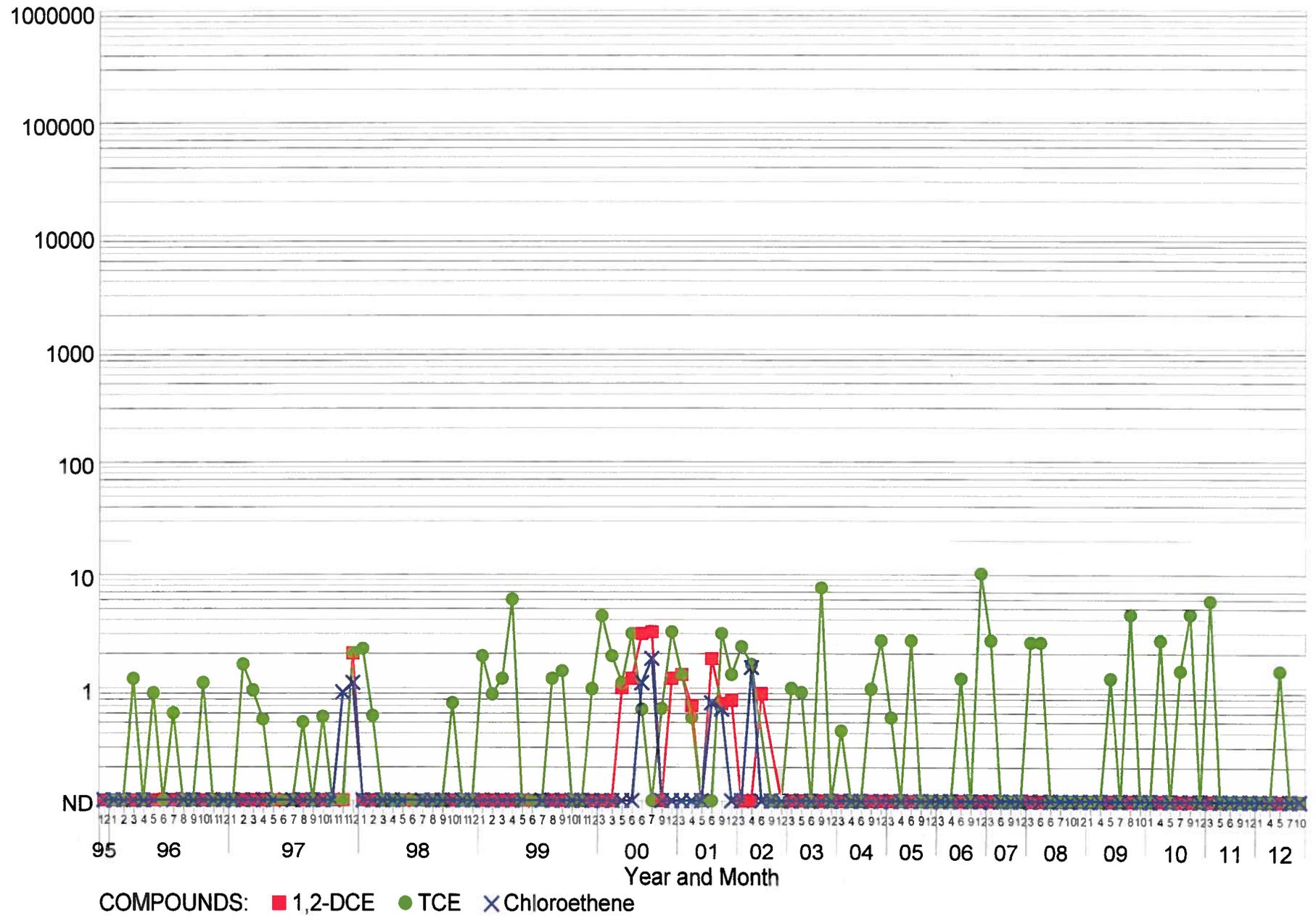


Figure 6.6

OF004

Concentrations, ug/L



Monitoring Locations

Water

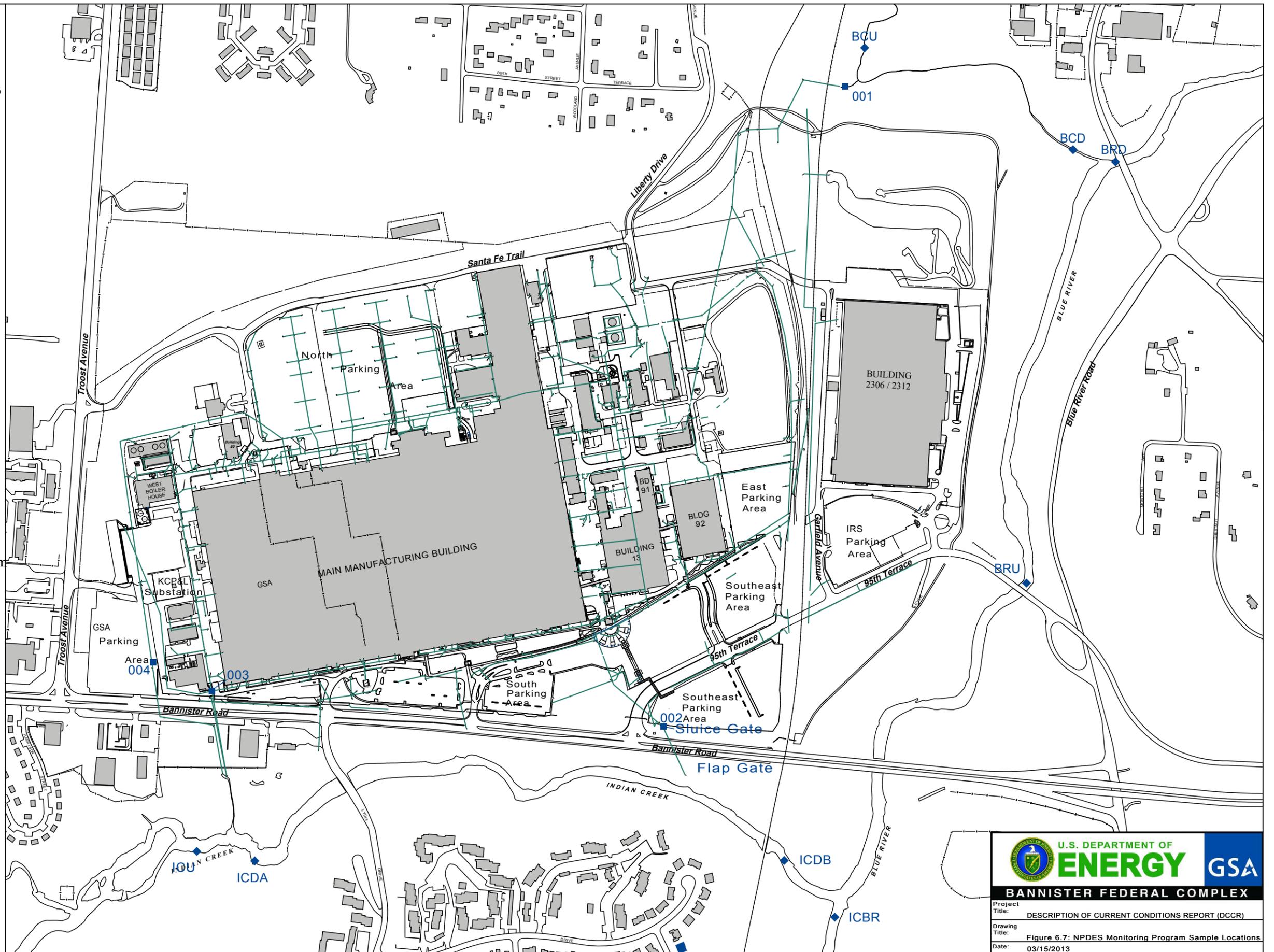
- Outfall
- ◆ Surface Water

Drains:

- Stormwater Lines

Abbreviations:

- BRD Blue River Downstream
- BRU Blue River Upstream
- ICU Indian Creek Upstream
- ICDA Indian Creek Downstream A
- ICDB Indian Creek Downstream B
- ICBR Confluence of Indian Creek and Blue River
- BCU Boone Creek Upstream
- BCD Boone Creek Downstream
- 001 Permitted Outfall
- 002 Permitted Outfall
- 003 Permitted Outfall
- 004 Permitted Outfall



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Project Title:	DESCRIPTION OF CURRENT CONDITIONS REPORT (DCCR)	
Drawing Title:	Figure 6.7: NPDES Monitoring Program Sample Locations	
Date:	03/15/2013	

Table 6.2 Surface Water Sampling Results

Date	Parameter	Surface Water Standard	Unit	OF001	OF002	OF003	OF004	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU
9-May-12	1,2-Dichloroethene (Total)	140000	ug/L	3.1	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
9-May-12	Aluminum	750***	ug/L	< 75	537	128	< 75	405	445	465	208	146	150
9-May-12	Arsenic	20***	ug/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
9-May-12	Barium	2000*	ug/L	119	15.6	194	326	121	118	106	124	126	121
9-May-12	Beryllium	5***	ug/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
9-May-12	Biochemical Oxygen Demand, 5d		mg/L		7.8								
9-May-12	Boron		ug/L	< 100	114	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
9-May-12	Chemical oxygen demand		mg/L		37.4								
9-May-12	Chlorine, Total Residual	permit	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
9-May-12	Chromium	74 - 117***	ug/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
9-May-12	Copper	7 - 12***	ug/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
9-May-12	Cyanide	5***	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
9-May-12	Iron	1,000***	ug/L	273	530	186	425	525	509	451	263	219	242
9-May-12	Lead	3 - 5***	ug/L	< 5	5.1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
9-May-12	Mercury	0.5***	ug/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
9-May-12	Nickel	52 - 84	ug/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
9-May-12	Nitrogen, Ammonia	10*	mg/L	< 0.1	0.54	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
9-May-12	Nitrogen, Nitrate		mg/L	1.8	0.64	2.2	1.2	3.2	3.3	1.2	5.3	5.5	5.5
9-May-12	Nitrogen, Nitrite		mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.2
9-May-12	Nitrogen, NO2 plus NO3		mg/L	1.8	0.67	2.2	1.2	3.3	3.4	1.2	5.3	5.6	5.6
9-May-12	Oil and Grease	permit	mg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
9-May-12	PCB-1016 (Aroclor 1016)		ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
9-May-12	PCB-1221 (Aroclor 1221)		ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
9-May-12	PCB-1232 (Aroclor 1232)		ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
9-May-12	PCB-1242 (Aroclor 1242)		ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
9-May-12	PCB-1248 (Aroclor 1248)		ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
9-May-12	PCB-1254 (Aroclor 1254)		ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
9-May-12	PCB-1260 (Aroclor 1260)		ug/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
9-May-12	pH	permit	Std. Unit	7.9	6.6	6.9	7.4	7.9	7.9	8	8	8	8
9-May-12	Phenolics, Total Recoverable	100***	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
9-May-12	Phosphorus		mg/L	0.18	< 0.1	< 0.1	< 0.1	0.11	0.15	< 0.1	0.22	0.21	0.16
9-May-12	Potassium		ug/L	2560	741	2980	2420	5050	5020	3950	6300	6290	6330
9-May-12	Selenium	5***	ug/L	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
9-May-12	Silver	3.2 - 8.4***	ug/L	< 7	< 7	< 7	< 7	< 7	< 7	< 7	< 7	< 7	< 7
9-May-12	Strontium		ug/L	792	87.6	647	1090	429	429	356	489	497	485
9-May-12	Sulfate	250*	mg/L	73.3	H5 6.7	80.8	70.4	71.2	71.7	51.4	91.1	90.6	93.7
9-May-12	Temperature	permit	deg C	16.1	19.1	14.5	15.9	18.4	18	21.9	20.1	19.1	19.9
9-May-12	Thallium	6.63**	ug/L	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
9-May-12	Titanium		ug/L	< 10	< 10	< 10	< 10	< 10	< 10	10.2	< 10	< 10	< 10

Table 6.2 Surface Water Sampling Results

Date	Parameter	Surface Water Standard	Unit	OF001	OF002	OF003	OF004	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU
9-May-12	Total Organic Carbon		mg/L		H1 3.4								
9-May-12	Total Settleable Solids	permit	mL/L/hr	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
9-May-12	Trichloroethene	80**	ug/L	< 1	< 5	< 1	1.4	< 1	< 1	< 1	< 1	< 1	< 1
9-May-12	Vinyl Chloride	525***	ug/L	< 1	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
9-May-12	Zinc	129-165***	ug/L	< 50	451	70	< 50	< 50	< 50	< 50	< 50	< 50	< 50
<p>Surface Water Standards are taken from 10 CSR 20-7.031 Table A. Where applicable, the lowest designated use standard is used in the "Surface Water Standard" column. Where an applicable standard was not available the drinking water standard was used, if available.</p> <p>PCB results are included in a separate table showing Method 1668 results.</p> <p>*drinking water standard - designated use and associated standard does not apply to surface water near the KCP. Referenced as other standards do not provide a value.</p> <p>**human health protection - fish consumption</p> <p>***protection of aquatic life</p> <p>¹Dissolved metal</p> <p>²Hardness dependant. Assume receiving water hardness in the 121 - 180 range. Based on chronic standard.</p> <p>Surface water samples were collected on 05/10/2012 and OF002 sample was collected on 5/24/2012.</p>													

Table 6.3
VOC Sample Results – Outfalls 001, 002, 003, and 004
(results in µg/L)

Outfall Date	001			002			003			004		
	TCE	1,2-DCE	Vinyl Chloride									
1/31/12	<1	<1	<1	<1	<1	<1	<1	1.2	<1	<1	<1	<1
4/3/12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
5/9/12	<1	3.1	<1	<5	<5	<5	<1	<1	<1	1.4	<1	<1
7/3/12	<1	2.3	<1	<5	<5	<5	<1	<1	<1	<1	<1	<1
10/2/12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

*Outfall 002 sample collected on 2/3/12.
 **Outfall 002 sample collected on 4/27/12.
 ***Outfall 002 sample collected on 5/24/12.
 ****Outfall 002 sample collected on 7/3/12.
 *****Outfall 002 sample collected on 10/2/12.

Drinking water maximum contaminant levels (MCLs):
 TCE – 7 µg/L
 1,2-DCE – 70 µg/L
 Vinyl Chloride – 2 µg/L

migration of contaminated groundwater into Outfall 001 (DOE 1993a). The Outfall 001 Interceptor System was installed during 1993 to capture VOC contaminated groundwater before it infiltrates the 001 storm sewer system. The 001 Interceptor System delivers the groundwater it captures to the Groundwater Treatment System. This portion of Outfall 001 lies in relatively low area where the storm sewer system runs overland (Figure 6.7). While this system greatly reduced the frequency and levels of VOCs detected at the Outfall 001 compliance point, VOCs continued to be periodically detected in the discharge of Outfall 001 (reference Outfall 001 VOC trend graph provided at the end of this section). VOCs in Outfall 001 began to again be routinely detected, at relatively low levels, during 2000. Prior to 2000 monthly samples were collected from outfalls for VOC analysis. After 2000 quarterly sampling for VOCs was performed. Between 2000 and 2004 several maintenance issues were addressed to ensure the 001 Interceptor System was performing as designed. During 2005 additional investigations were completed to determine the source of VOCs in Outfall 001.

Field reconnaissance of the area between the two Union Pacific railroad tracks in 2005 noted the presence of what appeared to be surface seepage along the base of the eastern embankment of the western railroad track immediately north of the existing 001 groundwater collection system Figure 6.8. Subsequent sampling confirmed the presence of contamination. The data suggest that groundwater seepage is occurring at the base of

the embankment of the railroad tracks and discharging to the 001 storm sewer system in an area of overland flow. During 2006, an engineering design to address the seepage along the railroad track embankment was completed for a groundwater seep capture system. In addition, a camera survey of the 001 stormwater piping system was conducted to determine if leakage of groundwater into piping could be a source of solvents detected in 001 flow. A number of piping integrity issues were noted from this survey. Groundwater was found to be infiltrating 001 piping in several areas. This information was used in the preparation of another engineering design for the repair of stormwater piping within the 001 storm sewer system. Corrective actions outlined in this design have not been implemented. No solvent discharge limit exists for the 001 outfall surface water discharge and as such no regulatory compliance issue exists at the outfall.

6.5.1.2 Outfall 002

The KCP's NPDES Permit and the Post Closure Permit require sampling for TCE, 1,2-DCE and vinyl chloride. The NPDES Permit requires quarterly sampling and the Post Closure Permit requires semi-monthly sampling for the above VOCs. Historically Outfall 002 has not detected VOCs in stormwater discharges. Sporadic detections of 1,2-DCE and TCE are noted on the Outfall 002 trend graph (derived from the NPDES sample point - six detections in multiple samples since 1999). Sampling for VOCs at the Post Closure Permit sampling point (002 flap gate) did not detect VOCs during . As required by the NPDES Permit, quarterly sampling for VOCs will continue during 2012 and as required by the Post Closure Permit semi-monthly sampling for VOCs will also continue during 2012.

6.5.1.3 Outfall 003

The KCP has previously conducted investigations to determine the source of VOCs in Outfalls 003 and 004 completing a preliminary investigation of six 10,000 gallon underground storage tanks (USTs) associated with the Former Fuels Test Lab (Bldg 50) located on the GSA controlled portion of the Bannister Federal Complex. A summary of the KCP's preliminary investigation was included in Section 3.6 of the 2001 Annual Groundwater Monitoring Report. The investigation concluded that a source of solvent contamination does exist in this area and is likely contributing to VOCs detected in

stormwater discharges from Outfalls 003 and 004. The GSA has further investigated this area to characterize contamination associated with the former tank farm. Follow-up investigations of the Bldg 50 area and associated USTs by GSA identified TCE concentrations as high as 43,100 µg/L in groundwater (GSA 2008). Outfall 003 had previously been lined by the KCP to address contaminant infiltration concerns. Liner terminations and service connections were sealed during 2005 to further ensure contaminant infiltration points were addressed. VOCs were not detected in stormwater discharges from Outfall 003 during 2012. Prior to the completion of the lining work in 2002 VOCs were routinely detected in stormwater discharges from Outfall 003 (reference Outfall 003 trend graph at the end of this section).

6.5.1.4 Outfall 004

Outfall 004 continues to occasionally detect TCE in stormwater discharges (Table 6.3 - see also Figure 6.6 Outfall 004 trend graph). The likely source of this contamination is the Building 50 area which is controlled by GSA (see discussion under Outfall 003 above). A camera survey of the 004 stormwater piping system was conducted during 2005 and 2006 to determine if leakage of groundwater into piping could be a source of solvents detected in Outfall 004 stormwater discharges. A number of piping integrity issues were noted from this survey. Relatively minor areas of groundwater infiltration have been found in several areas of Outfall 004. This information was used in the preparation of an engineering design for the repair of stormwater piping within the 004 storm sewer system during 2006. The work outlined in this design has not been implemented.

Note: Trend graphs depicting the occurrence of TCE, 1,2-DCE, and vinyl chloride in the four regulated outfalls are provided as (Figures 6.3 – 6.6).

6.6 PCBs

The occurrence of PCBs in stormwater discharges associated with stormwater run-off from the Bannister Federal Complex is largely associated with two sources that affect three of the four permitted outfalls. Under the KCP's Post Closure Permit (previously enforced by EPA as a RCRA Consent Order) potential sources of PCBs to the

environment have been extensively investigated and regulatory approved corrective actions implemented. In addition, the KCP's NPDES permit requires weekly monitoring for PCBs at the four permitted outfalls. The PCB discharge limit is 0.5 µg/L which is also the analytical quantification level for routine compliance reporting purposes. During 2012 none of the four outfalls detected PCBs for samples analyzed by methods required for routine compliance purposes. The following sections provide a basic overview of PCB occurrence in Outfalls 001, 002, and 003. Historically, Outfall 004 has not detected PCBs in permit compliance samples.

6.6.1 Outfall 001

The occurrence of PCBs in Outfall 001 is associated with historic spills that occurred during the late 1960's and 1970's from the Department 27 (D/27) heat transfer fluid system (DOE 1995). The occurrence of PCB contaminated soil associated with D/27 (SWMU #s 30 and 32) is further discussed in Section 5. The D/27 heat transfer fluid system used PCB Aroclor 1242 as the basis for the heat transfer fluid. Several spills associated with D/27 operations contaminated soils within the Outfall 001 water shed. Accessible areas of PCB soil contamination associated with D/27 have been removed (DOE 1994a). NPDES permit required sampling has not detected PCBs in Outfall 001 since 2004 (see Outfall 001 PCB trend graph in the attachments to this section).

During 2006 the KCP conducted an internal investigation of the 001 piping system to assess the condition of the pipe and collect samples at obvious infiltration points. The results of this investigation are summarized in the drawing set included as Appendix A. (note: the units in this drawing set erroneously reference mg/L, units are actually µg/L), Water contaminated with VOCs and PCBs infiltrates the 001 piping system at various locations. In addition, specifications were developed for lining various segments of the Outfall 001 system.

6.6.2 Outfall 003

Outfall 003 drains the southwest portion of the Bannister Federal Complex. The occurrence of PCBs in Outfall 003 is associated with a historic spill of PCB based transformer oil. A transformer located on the GSA controlled portion of the building roof

is the likely cause of PCBs detected in stormwater discharges from Outfall 003. Historic interviews with GSA personnel identified the leak of transformer oil. GSA conducted some additional follow-up wipe sampling of the area in question which did not detect PCBs. GSA has documented the occurrence of this transformer oil release and follow-up sampling in a Preliminary Assessment / Site Inspection Report that reviewed several areas of potential environmental contamination on GSA controlled portions of the Bannister Federal Complex (GSA 2008). PCB based transformer oil typically consists of Aroclor 1260. Based on the Aroclor typically detected in Outfall 003 stormwater and congener analysis by Method 1668 (see additional discussion below) analytical data from Outfall 003 confirms the source of PCBs is consistent with a transformer oil spill.

During 2002 the DOE began work to address the occurrence of PCBs in Outfall 003. The outfall was cleaned to remove PCB contaminated sediments during 2002 and again during 2008. Investigations by DOE also identified expansion joint material between pipe joints of the main collector line as being contaminated with up to 250 ppm of PCB Aroclor 1260. To rule out cross contamination issues, samples of the expansion joint material were collected from the top of the pipe. It is not uncommon to find PCBs in construction materials that pre-date the early 1970's. In order to address the occurrence of PCBs in the expansion joint material DOE lined the length of the main trunk line and the S lateral and AC lateral (Figure 6.9). Cleaning and lining the Outfall 003 storm sewer system has achieved routine compliance with the 0.5 µg/L PCB discharge limit (Figure 6.10).

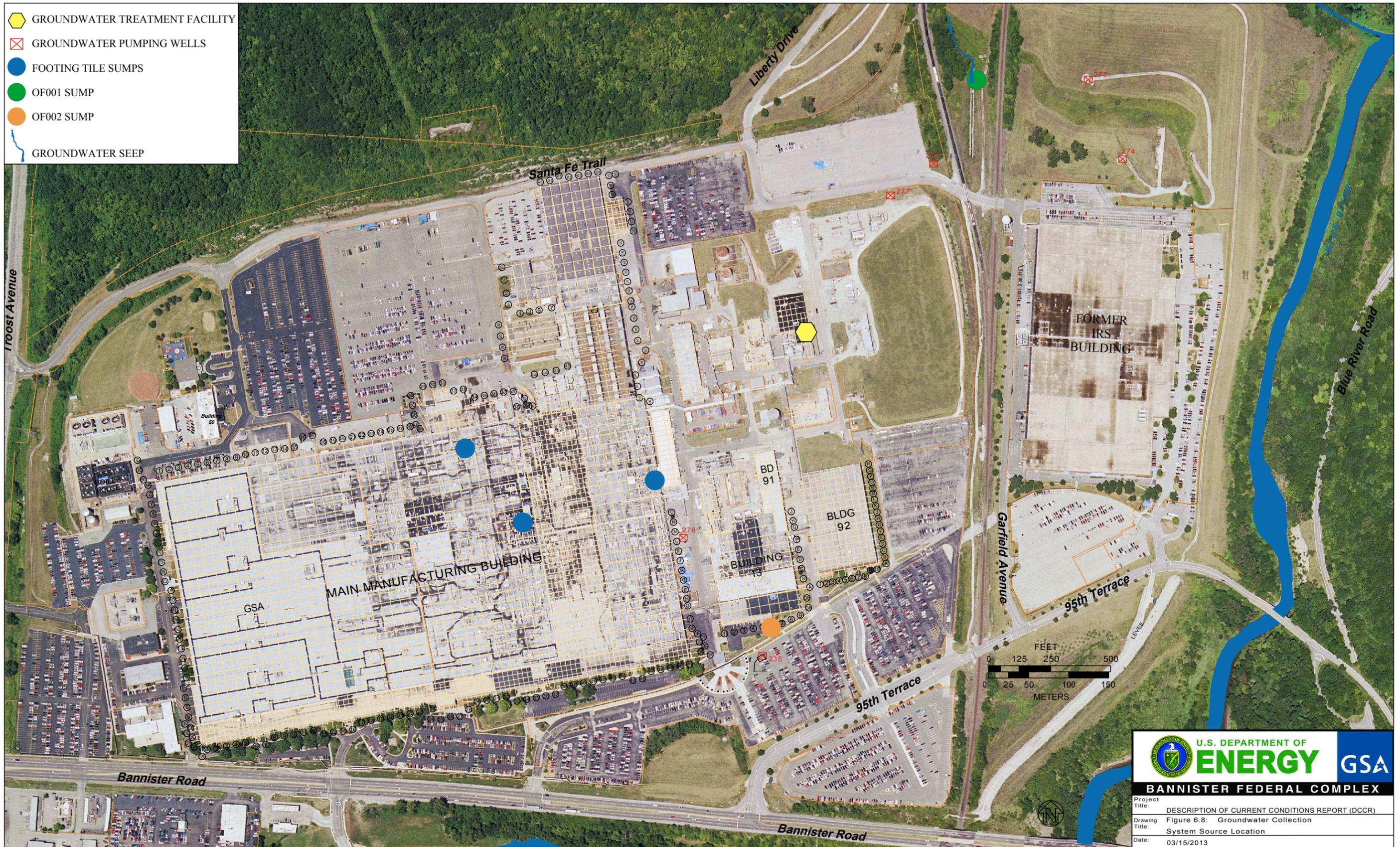


Figure 6.9
Outfall 003 System

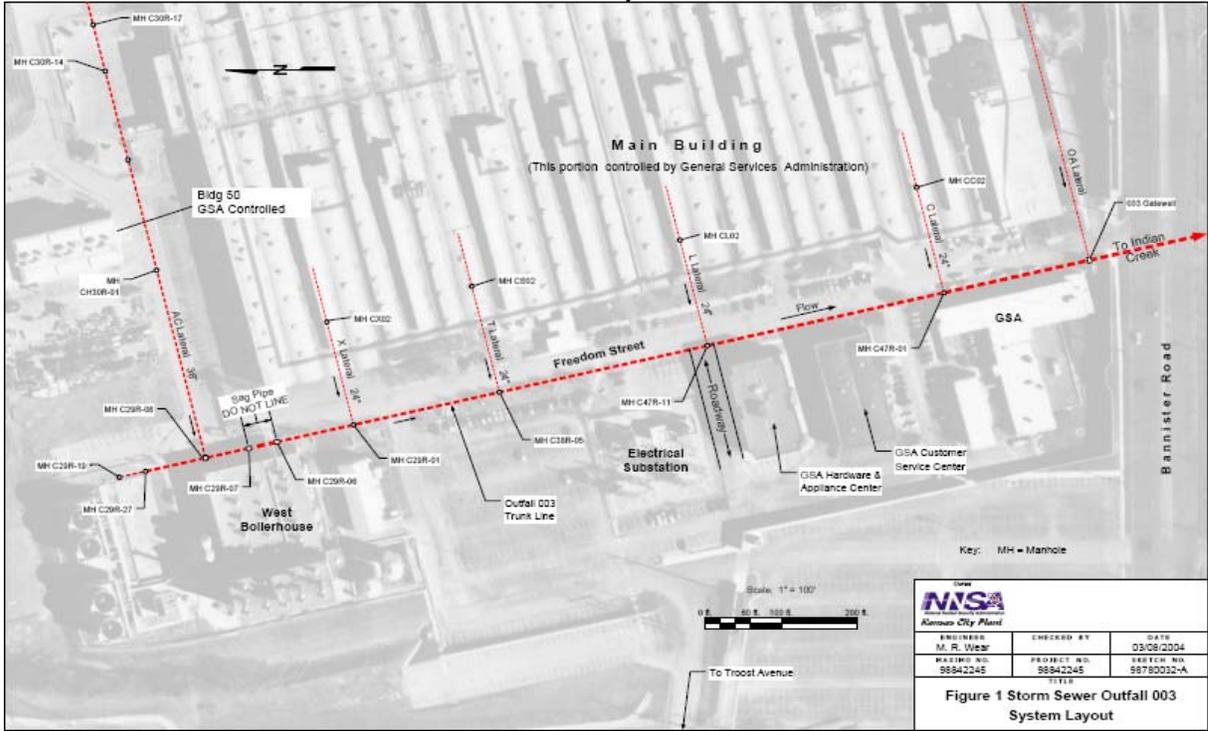
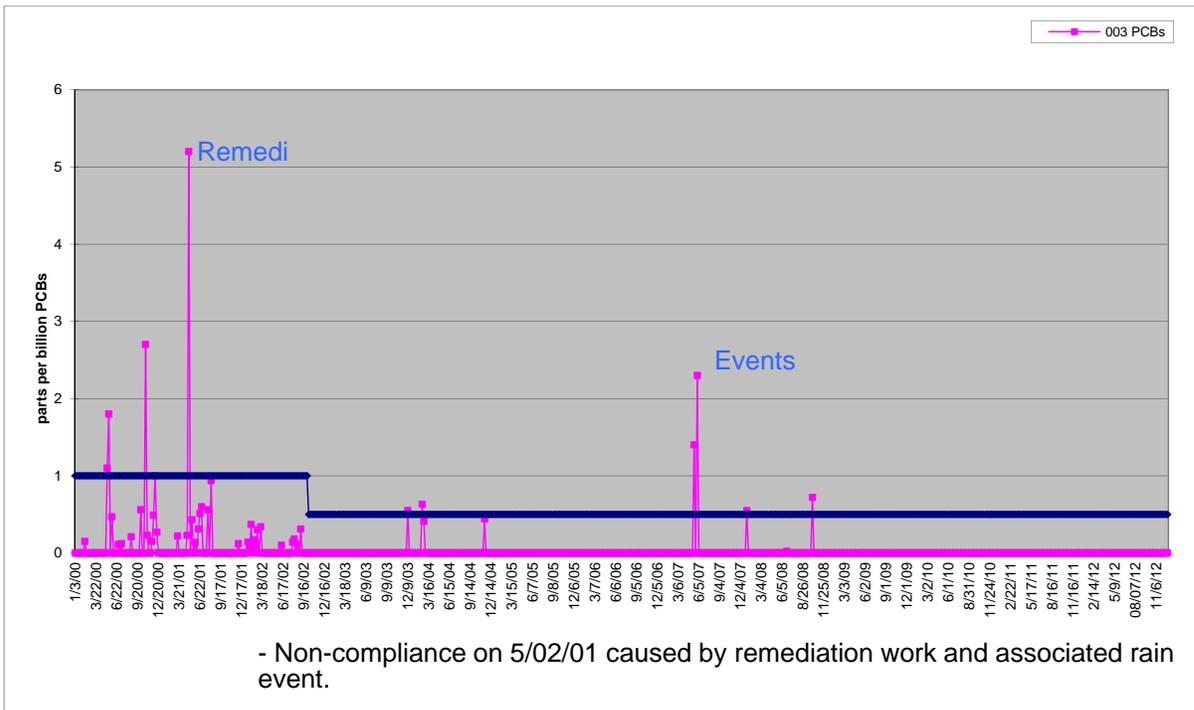


Figure 6.10
Outfall 003 PCB Trend Graph



6.6.3 Outfall 002

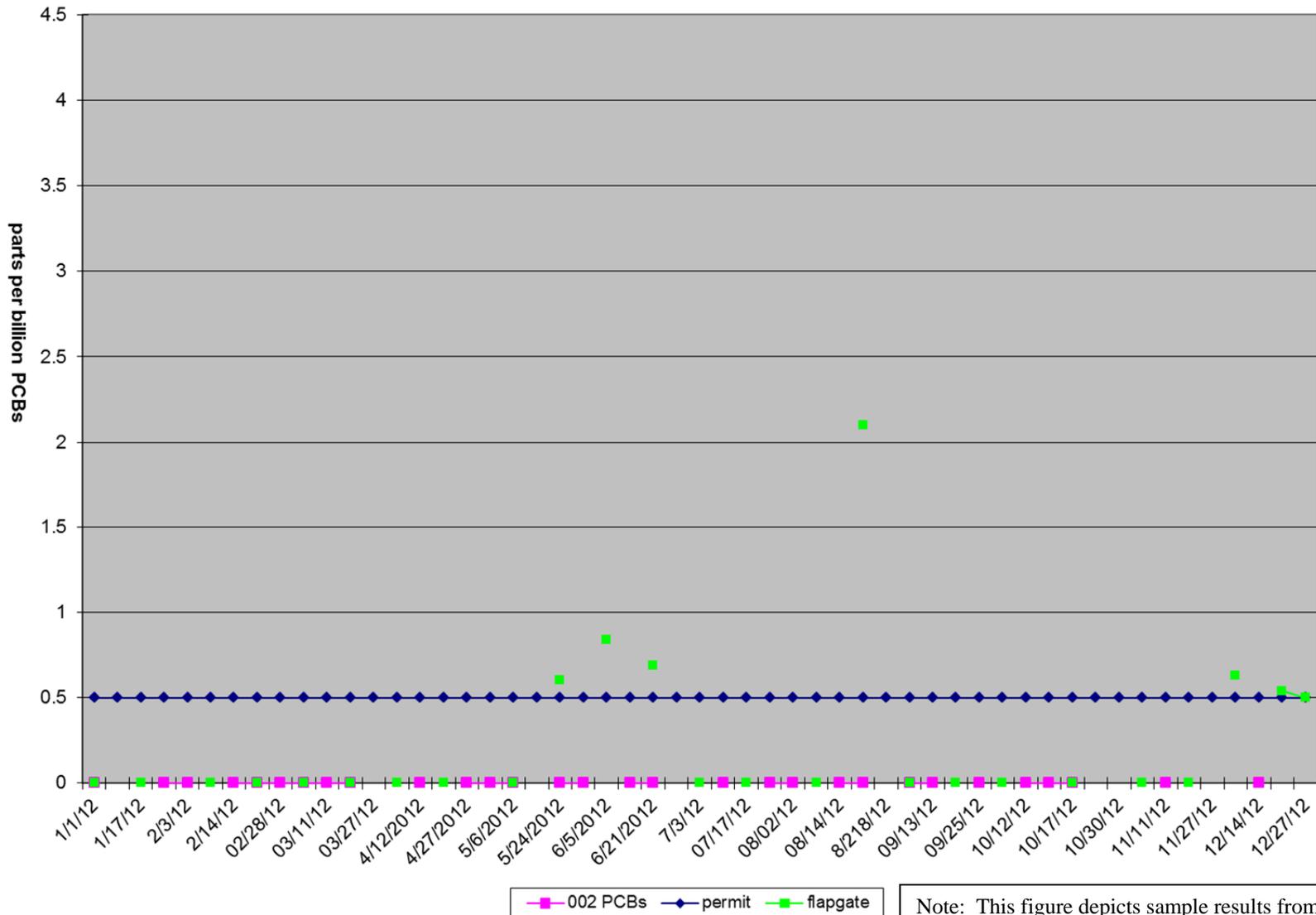
The occurrence of PCBs in Outfall 002 is associated with historic spills that occurred during the late 1960's and 1970's from the Department 26 (D/26) heat transfer fluid system. The occurrence of PCB contaminated soil associated with D/26 (SWMU #s 12 and 31) is further discussed in Section 5. The KCP's Missouri State Operating Permit requires sampling of Outfall 002 stormwater discharges at the sluice gate location and the RCRA Part B Permit Post Closure Permit requires sampling of Outfall 002 discharges at the flap gate location (Figure 6.7).

As outlined under Appendix F of the Sampling and Analysis Plan, which is specific to the RCRA Part B Permit, stormwater discharges from Outfall 002 are sampled on a semi-monthly basis for PCBs, VOCs, and PCBs in sediment. Water samples are collected at the Outfall 002 flap gate (Figure 6.7). Sediment samples are collected at the Outfall 002 sluice gate, approximately 100 yards upstream of the flap gate, by installing a sediment collection tray which is left in place during intervals between sample events. In addition, Outfall 002 is monitored under the KCP's NPDES permit at the sluice gate for PCBs and other selected parameters.

The occurrence of PCBs in Outfall 002 is well documented (IT Corp. 1989, DOE 1977, DOE 2003). PCB Therminol FR-1 was used at the KCP from 1966 – 1974 in heat transfer fluid systems (DOE 1993b). During 1969 and 1971 spill events from the heat transfer system resulted in the discharge of PCBs to the storm sewer system and soils beneath D/26. During each of the above events hay was used to absorb the spilled material and the cleanup residual turned over to a licensed contractor for disposal (DOE 1977). The KCP has undertaken numerous cleanup actions since the initial spill events to further remediate the occurrence of PCBs in Outfall 002 and soils spending approximately \$18 million on corrective actions.

These actions had previously resulted in routine compliance with the PCB discharge standard of 1.0 µg/L contained in the KCP's NPDES permit (MO-0004863). Weekly

Figure 6.11
Outfall 002 PCBs



Note: This figure depicts sample results from both the NPDES Permit compliance point noted as Outfall 002 PCBs and the flap gate. The flapgate samples are not used to demonstrate compliance with the permit limit.

Table 6.4
 Outfall 002 PCBs
 (results ug/L)

Date	002 PCBs	flapgate	permit	comments
1/1/12	<	<	0.5	
1/10/12			0.5	002 reroute system on-line - effectively rerouted all flow
1/17/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
1/22/12	<		0.5	
2/3/12	<		0.5	
2/7/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
2/14/12	<		0.5	
2/20/12	<	<	0.5	
02/28/12	<		0.5	
03/08/12	<	<	0.5	
03/11/12	<		0.5	
03/19/12	<	<	0.5	
03/27/12			0.5	002 reroute system on-line - effectively rerouted all flow
4/3/2012		<	0.5	002 reroute system on-line - effectively rerouted all flow
4/12/2012	<		0.5	
4/17/2012		<	0.5	002 reroute system on-line - effectively rerouted all flow
4/27/2012	<		0.5	
4/29/2012	<		0.5	
5/6/2012	<	<	0.5	
5/15/2012			0.5	002 reroute system on-line - effectively rerouted all flow
5/24/2012	<	0.6	0.5	
5/30/2012	<		0.5	
6/5/2012		0.84	0.5	002 reroute system on-line - effectively rerouted all flow
6/11/2012	<		0.5	
6/21/2012	<	0.69	0.5	
6/26/2012			0.5	002 reroute system on-line - effectively rerouted all flow
7/3/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
07/13/12	<		0.5	
07/17/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
07/26/12	<		0.5	
08/02/12	<		0.5	
08/07/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
08/14/12	<		0.5	
08/25/12	<	2.1	0.5	
8/218/12			0.5	002 reroute system on-line - effectively rerouted all flow
09/07/12	<	<	0.5	
09/13/12	<		0.5	
09/18/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
09/25/12	<		0.5	
10/2/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
10/12/12	<		0.5	
10/13/12	<		0.5	
10/17/12	<	<	0.5	
10/23/12			0.5	002 reroute system on-line - effectively rerouted all flow
10/30/12			0.5	002 reroute system on-line - effectively rerouted all flow
11/6/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
11/11/12	<		0.5	
11/20/12		<	0.5	002 reroute system on-line - effectively rerouted all flow
11/27/12			0.5	002 reroute system on-line - effectively rerouted all flow
12/4/12		0.63	0.5	002 reroute system on-line - effectively rerouted all flow
12/14/12	<		0.5	
12/18/12		0.54	0.5	002 reroute system on-line - effectively rerouted all flow
12/27/12		0.5	0.5	002 reroute system on-line - effectively rerouted all flow
CY12 AVG	0.05			average using 1/2 DL when ND

sampling and analysis for PCBs is required by this permit. The PCB NPDES Permit limit was reduced to 0.5 µg/L effective November 2002. During 2012 the 0.5 µg/L PCB limit was not exceeded. Figure 6.11 and Table 6.4 depict PCB concentrations in Outfall 002 during 2012. Both the table and the figure provide data from the NPDES permit monitoring location (sluice gate) and the Post Closure Permit monitoring location (flap gate). The sluice gate location (NPDES compliance point) is sampled on a weekly basis

Although weekly sampling is required by the NPDES Permit there are numerous weeks throughout the year where there is no discharge and, therefore, no sample collected from the 002 NPDES compliance point. MDNR personnel from the Kansas City Regional office accompanied KCP representatives during an inspection to determine the effectiveness of the Outfall 002 diversion system on April 7, 2005. Active flow downstream of the diversion system was not observed during this inspection and KCP was instructed to note in the quarterly discharge monitoring reports that there was no flow during the monitoring period. In order to ensure samples are collected from outfall 002 during rain events an automated sampler has been installed. Sample events are triggered on a rain gauge tipping bucket and a flow sensor. This configuration ensures samples are collected when rain events occur during weekends or off-shifts.

The flap gate monitoring location was added under the Post Closure permit at the request of MDNR RCRA Permit program personnel. Even though there may be no discharge from Outfall 002, samples from the flap gate location are nevertheless collected on a weekly basis. Surface water from Indian Creek backs up into the Outfall 002 raceway and therefore, water is available at the flap gate location. Water from Indian Creek does not back-up into Outfall 002 piping as there is an approximate one foot drop-off from the flap gate structure to the raceway. Sample results from the Outfall 002 flap gate location have historically periodically detected PCBs. Sample results derived from the flap gate location are not representative of discharges from Outfall 002. During periods of no discharge PCB results at the flap gate location are affected by sediment entrainment. The Outfall 002 raceway accumulates sediments that contain low levels of PCBs. Entraining even small amounts of sediment in the sample can impact the PCB concentration.

Sediments that collect in the Outfall 002 raceway are typically contaminated with low level PCBs. During August 2011 the sediment from the Outfall 002 raceway was sampled at four equidistant locations along the long axis of the raceway. These samples detected 136 µg/kg, 2,750 µg/kg, 460 µg/kg, and 407 µg/kg of PCB Aroclor 1248. The water is less than one foot deep in the raceway and the pickup tube on the sampler is occasionally impacted by these sediments resulting in detections of PCBs in the water sample collected at the flap gate location. Sample results at the sluice gate location (NPDES compliance point) and the flap gate location (sample location at the raceway) are not comparable (Figure 6.11). There are no active or passive sources of flow into Outfall 002 downstream of the sluice gate location that would otherwise account for the sporadic occurrence of PCBs at the flap gate sample location. During 2012, PCBs were detected seven times in semi-monthly samples collected at the flap gate (post Closure Permit) monitoring location. PCB contaminated sediments are scheduled to be removed from the Outfall 002 Raceway during 2013.

Finally, 002 Outfall PCB concentrations are collected weekly as part of the National Pollutant Discharge Elimination System (NPDES) permit requirements. Typical PCB discharge concentrations are less than 0.5µg/L. Figure 6.12 (p. 6-63) provides a trend graph of PCB concentrations in 002 storm water discharges. The KCP's RCRA part B Post Closure Permit also requires that sediment samples be collected at the sluice gate location and, in addition, that Indian Creek stream bed sediments near the 002 discharge point also be sampled for PCBs (Figure 6.13).

6.7 EPA Consent Order / RCRA Part B Corrective Actions

Numerous release site investigations and related corrective actions have been completed to identify and remediate the occurrence of PCBs in Outfall 002 and summary reports forwarded to MDNR. The Outfall 002 Corrective Actions Interim Measures Report (DOE 2003) was submitted to MDNR November 2003 which provides a detailed summary of historic and corrective actions completed through 2003 to reduce PCBs associated with Outfall 002 stormwater discharges (DOE 2003). The following sections

provide an overview of investigations and corrective actions that have been implemented to address the discharge of remnant PCBs in Outfall 002 stormwater discharges.

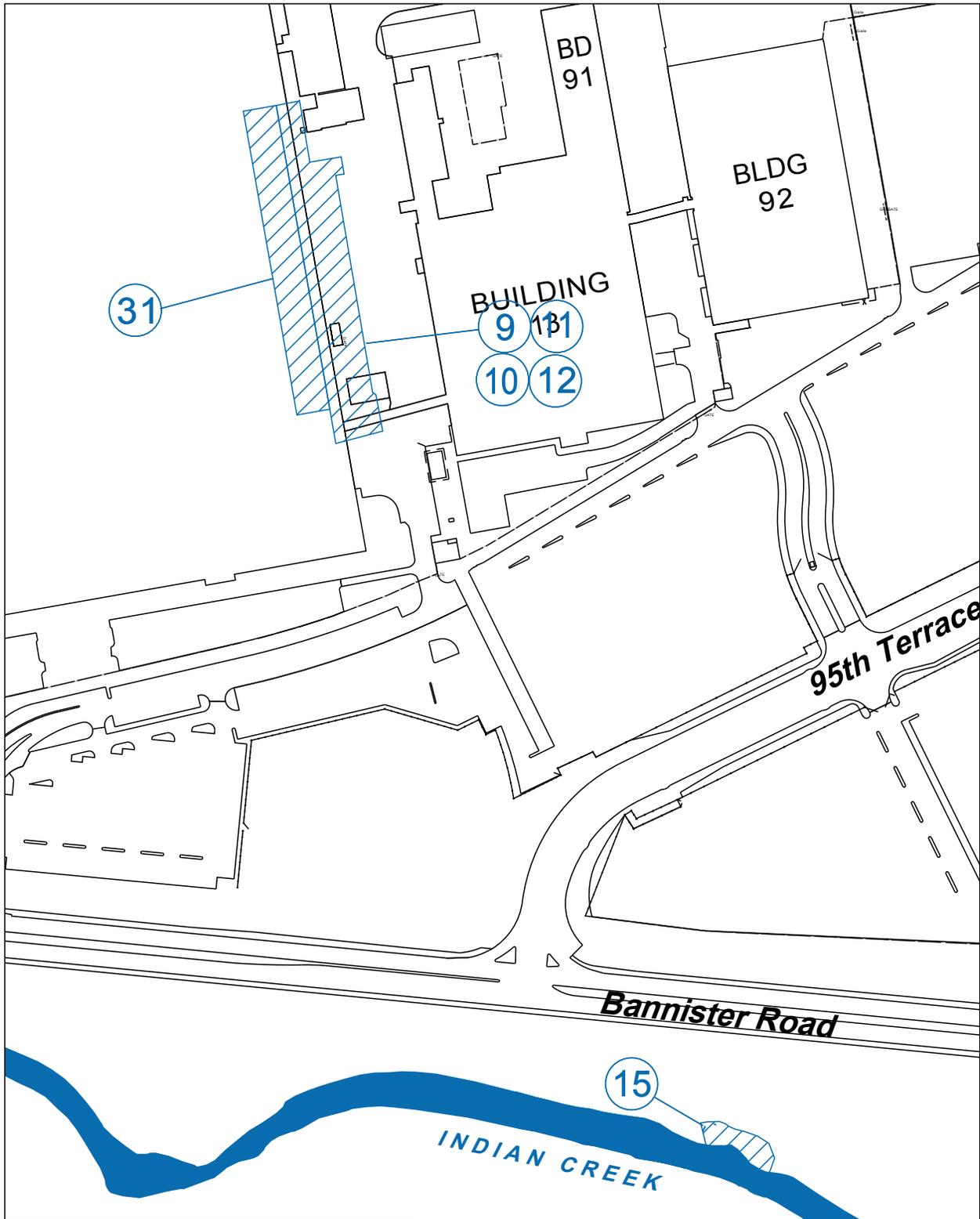
6.7.1 Investigations – Outfall 002

- Infiltration and Inflow Study, 1983.
- Hydrogeological Site Characterization initiated 1985.
- City Water and Sewerage Evaluation, 1989.
- Abandoned Indian Creek Outfall (AICO) RCRA Facility Investigation (RFI) 1990; Corrective Measures Study (CMS) 1992.
- Bioaccumulation Studies – 1992, 1993, 1994, 1998, 2003 and 2008
- D/26 RFI, 1993.
- 95th Terrace RFI, 1998.
- Miscellaneous Storm Sewer sample events to characterize discharge.
- 95th Terrace Corrective Measures Study, 2002.
- 2002 – DOE Office of Science and Technology Technical Assistance review team site visit and summary report with recommendations.
- 2003 - Interim Measures Report – Outfall 002 Corrective Actions, 2003
 - ↳ Main Building Roof
 - ↳ Semi-Permeable Membrane Devices
 - ↳ Method 1668 Analysis

6.7.2 SWMUs – Department 26 / Abandoned Indian Creek Outfall / 95th Terrace Site

The AOC divided investigation and cleanup activities by Solid Waste Management Units (SWMUs) identified under the Order. The SWMUs investigated under the AOC potentially impacting PCB concentrations in Outfall 002 are Department 26 (D/26) which includes SWMU 31 (D/26 Inside) and SWMU 12 (D/26 Outside), Abandoned Indian Creek Outfall (AICO) SWMU 14, and the 95th Terrace Site, SWMU 42 (Figure 6.14).

PCB contamination at the Department 26 site, AICO, and the 95th Terrace site is largely the result of 1969 and 1971 D/26 spills. D/26 is located in the southeast corner of the MMB and made plastic products (Figure 6.13). PCBs were an integral part of the production process which involved the use of a PCB heat transfer fluid. The 1969 spill occurred when an expansion joint failed and released approximately 1,500 gallons (gal) of PCB oil to an adjacent gravel area. Approximately 900 gal of PCB oil went into the storm sewer and discharged via the 002 Outfall to Indian Creek at the AICO location. The spill was reportedly cleaned up using hay and pitch forks. Records documenting the 1969 cleanup effort are not available and confirmation sampling verifying cleanup



SWMU	Location
9	Bldg. 57 Acid & Alkaline Tanks
10	Waste Oil Tank Under Plating Bldg.
11	Substation 18 North of Plating Bldg.
12	Department 26 Outside
15	Outfall 002
31	Department 26 Inside

	U.S. DEPARTMENT OF ENERGY	
	BANNISTER FEDERAL COMPLEX	
Project Title: DESCRIPTION OF CURRENT CONDITIONS REPORT (DCCR)		
Drawing Title: FIGURE 6.14 PCB SWMUs WITHIN OUTFALL 002 WATERSHED		
Date: 03/15/2013		

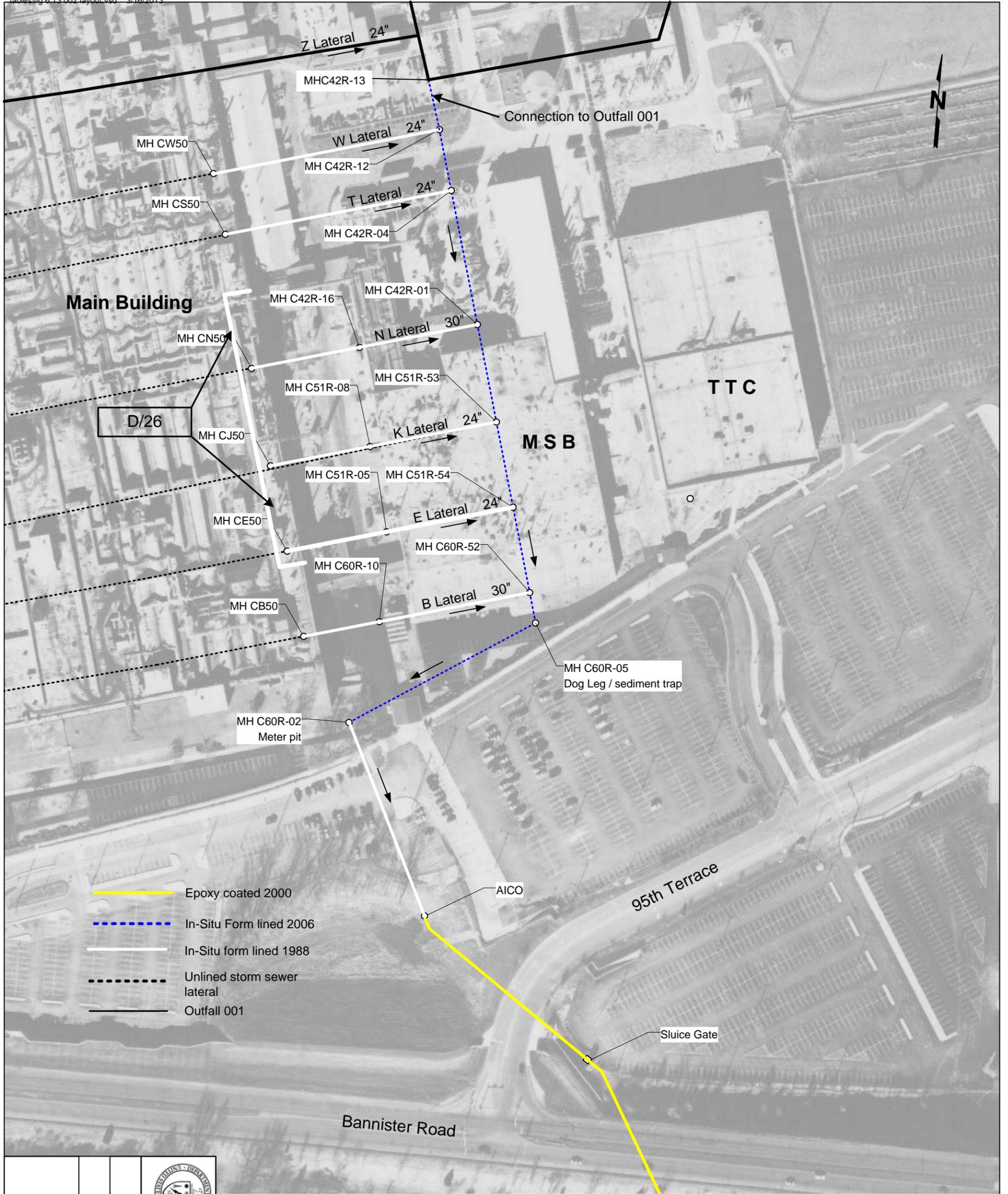
effectiveness was not performed. Despite the cleanup effort, residual PCBs remained in the creek bottom sediments. Shortly thereafter, Indian Creek was rerouted and the 1969 contamination was entombed in place alongside and underneath the box culvert. Undoubtedly some of the PCBs were redistributed during construction of the box culvert. The 1969 spill was the primary source for both AICO and 95th Terrace PCB soil contamination. In 1971 another PCB spill occurred at D/26. Approximately 1,100 gal of PCBs discharged to surface soils outside D/26. Some of the PCB oils reached the storm sewer and discharged to Indian Creek via the newly installed box culvert and contaminated soils in the vicinity of the new 002 Outfall. The box culvert isolated AICO from the 1971 PCB spill. Again, cleanup was performed using hay and pitchforks. Records documenting the 1971 cleanup effort are not available and confirmation sampling verifying cleanup effectiveness was not performed. Cleanup efforts associated with the 1969 and 1971 spill events were in accordance with practices typically employed during this timeframe (DOE 2000).

Figure 6.15 is a 1967 aerial photograph of the 95th Terrace site prior to re-routing of Indian Creek. The old channel between the two outfall locations and the box culvert, excluding remediated AICO, constitutes the 95th Terrace site. The site name, 95th Terrace, is derived from the road 95th Terrace that overlies the former channel and box culvert (Figure 6.13). The 95th Terrace Corrective Measures Study (CMS) addressed cleanup actions for this site. (Figure 6.16) provides a cross section of PCB contaminated soil removed with the AICO project and the remaining PCB contaminated soil associated with the 95th Terrace site.

6.7.3 Department 26 (SWMUs 12 and 31)

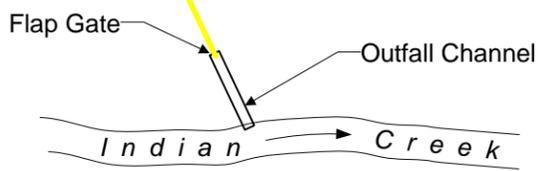
See also Sections 5.3 and 5.4

The D/26 was investigated as two SWMUs, D/26 outside (SWMU 12) was investigated under the Plating Building RFI and essentially characterized PCB releases associated with the D/26 hydrotherm system. The D/26 RFI characterized PCB releases that occurred inside the main building where the plastic injection molding presses are located.



- Epoxy coated 2000
- - - In-Situ Form lined 2006
- In-Situ form lined 1988
- - - Unlined storm sewer lateral
- Outfall 001

0 100 200
Scale in Feet



Key: MH = Manhole

Outfall 002 Layout	 Kansas City Plant	 Operated by Honeywell Federal Manufacturing & Technologies	Figure 6.13
	ENGINEER Maximo NO.	CHECKED BY	DATE September 2006
	TITLE		WORK ORDER NO.

Figure 6.15
1967 Aerial Photograph of
95th Terrace Site / Indian Creek

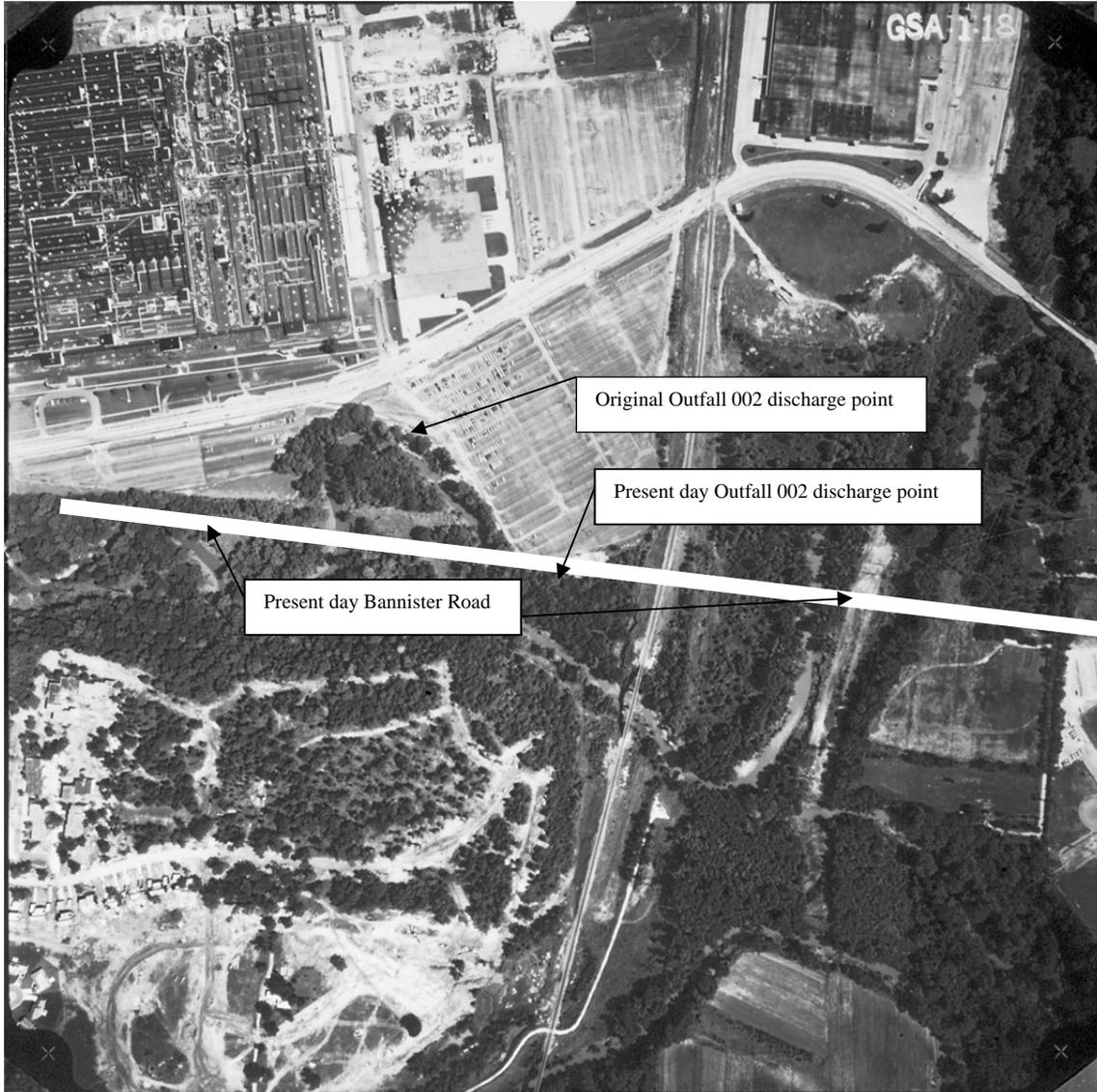
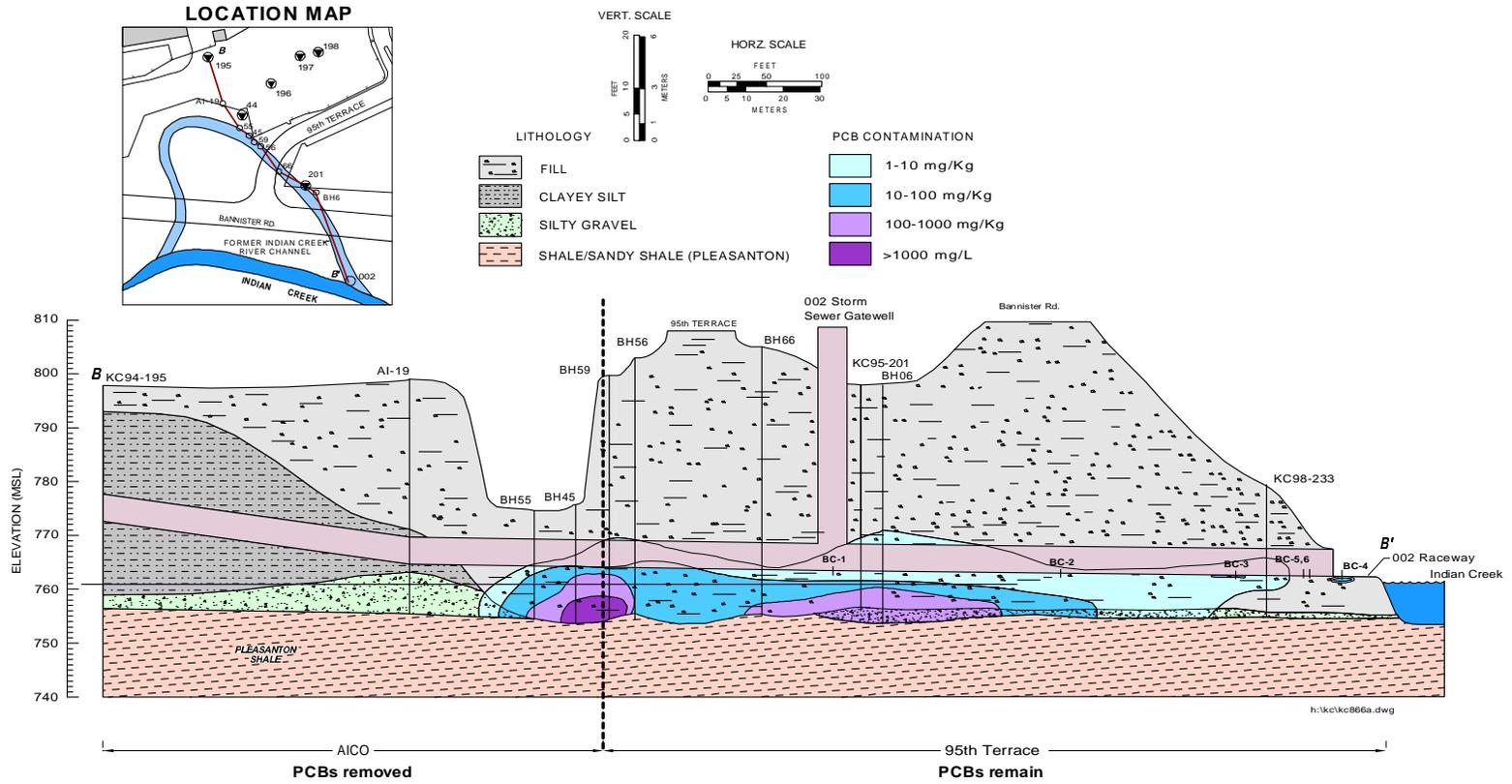


Figure 6.16



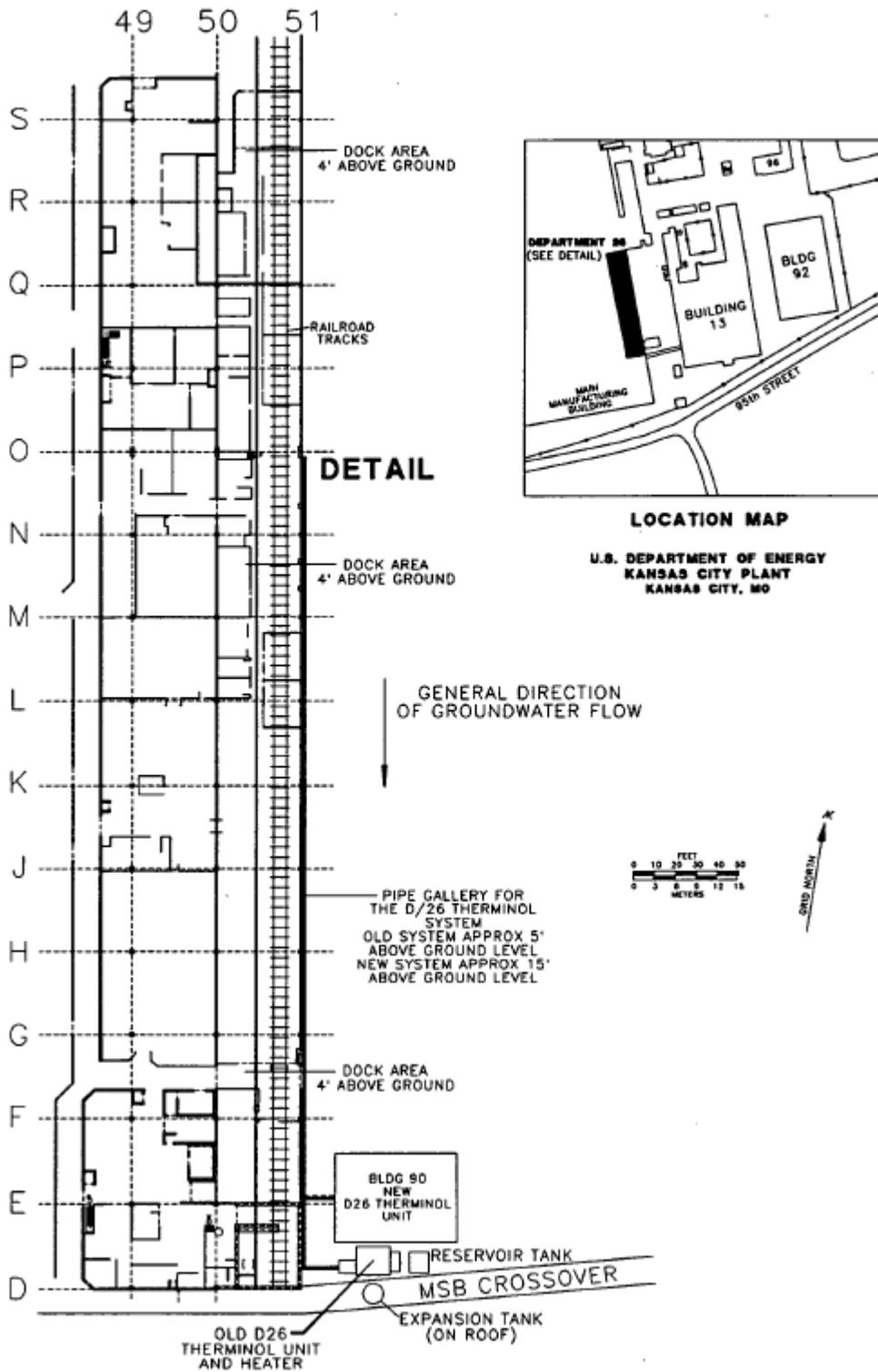
D/26 functions are primarily plastics molding and machining operations, which began in the late 1950s and continue to the present (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). The location of the department's operations has remained essentially the same since the onset, with expansions both north and south to encompass its present-day size.

Following construction of KCP in 1942, the area now occupied by D/26 was used as a loading dock for the railroad. Rail operations continued at KCP until the late-1940s. From the late 1940s to the late 1950s, the area was used primarily for storage (the type and quantities of materials stored could not be determined). The old railroad dock still remains in the area presently occupied by D/26. The railroad tracks were removed from those portions of D/26 requiring subsurface construction, and the floor was extended with steel-frame construction from the old dock east to the 51 wall (east outside wall of D/26 and MMB) for the entire north/south length of the department. The area from the old railroad dock to the 51 wall historically has contained most of the equipment used in the plastic molding operations and thus represented the primary area of concern during this investigation. The old railroad tracks were laid on a bed of gravel, and in most locations, concrete was poured before extending the floor over the tracks from the old dock to the 51 wall (Figure 6.17).

PCBs were suspected in D/26 subsurface soils because of past use of a heat-transfer fluid (Therminol FR-1) in the department's heat-transfer system for plastics molding operations. Therminol FR-1, manufactured by Monsanto Corporation, was primarily a pure PCB oil containing mostly Aroclor 1242 (DOE 1993a). This heat-transfer fluid (flash point of 1200" *F*) controlled temperature during injection molding operations at D/26 from the mid 1960s through 1974 (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNLGJ, 1990). During fabrication, the injection molds are subjected to extreme changes in temperature (personal communication from R. Hinshaw, Allied Signal. Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990).

Figure 6.17

Location of D/26 Hydrotherm Systems



D26
11/13/92

The thermodynamic stability of PCBs made them suitable for heat-transfer fluids. Before installing the heat-transfer system, temperature was controlled by steam and water and by individual electric heaters called "sterelco heaters" that used a non-PCB fluid referred to as "Ucon fluid" (personal communication from R. Klee, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990).

The D/26 heat-transfer system was first installed in the mid-1960s to facilitate the department's plastics injections molding operations (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). The system consisted of an aboveground piping network, a heater, reservoir and expansion tanks (also aboveground), and several pumps located both inside and outside MMB. This equipment circulated heated PCB fluids through high-temperature hydraulic presses and injection molding equipment used for making plastic products. The fluid capacity for the D/26 heat-transfer system was 6500 gal (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990) and has remained unchanged since being installed.

The system's reservoir tank and heater were originally located on a gravel pad outside MMB between the former plating building and the MSB crossover (Figure 6.17). The system's expansion tank was located on the roof of the MSB crossover (Figure 6.17). Periodically, back pressure from hydrochloric acid forming within the system's feed and return lines caused "blowouts" to occur through vents in the expansion tank (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). The hydrochloric acid was formed by replacing chlorine in Therminol FR-1 with hydrogen, which entered the system through water condensation caused by extreme temperature changes within the system (personal communication by D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). Contamination resulting from any spilling of hydrochloric acid onto the surrounding soils during these "blowout" events is unlikely due to the small volume of acid in the lines and the neutralizing effect of the soil. No containment provisions existed for the equipment at this time (personal communication by D. Floersch, Allied Signal, Inc., Kansas City, Mo.,

with S. C. Hall, ORNL-GJ, 1990). Consistent with the present design, both the feed and return lines for the system ran as a "pipe gallery" along the exterior east wall of MMB outside of D/26, with entry points into D/26 at several locations along its length. Once inside D/26, the piping network served, as it does now, several pumping stations referred to as "pump packages". From the pump packages, the heat-transfer fluid is distributed to individual pieces of equipment through a piping network located beneath the raised steel flooring placed over the old railroad tracks (personal communication from C. Miller, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). Once there, the heat-transfer fluid bathes the plastic molds to the appropriate temperature. Much of the equipment in D/26 is located in deep pits (approximately 16 to 20 ft deep) for stability, where heat-transfer fluid often leaked. Although some of the pits were concrete lined, others may have been supported at the base only by a concrete slab (personal communication from C. Miller, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). In each case, the hot PCB oil had access to subsurface soils through cracks or joints in the concrete or through direct soil contact.

In 1974, following federal regulation of PCBs, Therminol FR-1 was discontinued as a heat-transfer fluid at KCP (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). Therminol FR-1 was drained from the D/26 system, which was then flushed with Therminol FR-55, a low-PCB-concentration fluid manufactured by Monsanto Corporation. The FR-55 fluid acted like a solvent for removing residual Therminol FR-1 (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). To comply with TSCA (40 CFR 761), a draining and flushing process continued until testing indicated that the system contained less than 50 mg/kg of PCBs (DOE 1993b).

Draining and flushing was required several times initially and approximately once per year thereafter to stay within the limits enforced under TSCA (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). As an example, 1981 testing reported PCB concentrations as high as 72 mg/kg (DOE 1993b). From 1974 until the entire system was replaced in 1985, draining and

flushing were the procedures used to reduce the concentration of PCBs within the system. Both the Therminol FR-1 and the contaminated Therminol FR-55 were returned to Monsanto Corporation for disposal (DOE 1993b).

In 1974, following the draining and flushing process, the D/26 Therminol FR-1 was replaced with a non-PCB heat transfer fluid (Therminol 66) also manufactured by Monsanto Corporation. Therminol 66 is a hydrogenated, modified terphenyl (non-PCB) fluid with a significantly lower flash point (DOE 1993b). This lower flashpoint of Therminol 66 required installing a fire protection sprinkler system in D/26. An increase in PCBs in the D/26 heat-transfer system following the change to Therminol 66 was attributed both to previously adsorbed PCBs leaching from porous materials and to residual Therminol FR-1. This continuing resurgence of excessive PCB concentrations (i.e., >50 mg/kg) prompted replacing the hardware for the entire heat-transfer system in 1985. The new Therminol system installed at D/26 has a containment building (Bldg. 90) housing the reservoir tank and heater (Figure 6.17). The expansion tank for the new system is located on the roof of the containment building. Following the system's complete hardware replacement Therminol 66, a non-PCB heat transfer fluid, was again used for operations at D/26.

Although the pre-1985 Therminol system was a closed system, contamination from both accidental spills or breaks in the lines, as well as from past handling practices of the molds, presented sufficient reason for concern. Indeed, two major PCB releases from accidental spills due to equipment failure had been documented at D/26 (DOE 1993b). In 1969, an expansion joint failure spilled 1500 gal to a gravel area (along the 51 wall, between the L and K columns); an estimated 900 gal were reported to have gone into the storm sewer and discharged into Indian Creek. In 1972, most of an 1100-gal spill was confined to soils outside the building, but a small amount (a reported 23 gal) was lost to the storm sewer. At the time of the spills no clean-up, with the exception of gross surface contamination, was performed. However, recent corrective measures have been and continue to be performed at locations impacted by these two spills. The 002 Raceway site, the discharge point of the 002 storm sewer system to Indian Creek, was remediated

during 1989 (IT Corp 1989) . The AICO site, the former discharge point to Indian Creek, was remediated during 1993 (DOE 1994). The D/26 Inside and D/26 Outside SWMUs are the sources of PCB contamination ultimately detected at the AICO and 95th Terrace SWMUs. A significant mass of PCB contaminated soils remains beneath the main manufacturing building. As discussed in Section 8 the Bannister Federal Complex is one of several sources of PCBs detected in biota in Indian Creek and the Blue River near the facility.

6.8 RFI investigations

6.8.1 Abandoned Indian Creek Outfall (SWMU 14)

An RFI was performed in 1988 and 1989 around the former storm sewer discharge point (AICO) to determine the extent of subsurface PCB contamination exceeding 10 ppm PCBs [the cleanup level adopted for the AICO Corrective Measure Implementation (CMI) (IT Corp. 1989)]. The RFI concluded that PCB soil contamination was present over most of the AICO site. However, a steep embankment at the east side of AICO prevented drilling equipment from working in that area. The data gap was acknowledged, and additional subsurface soil sampling was deferred until the CMI phase in 1993, when earthmoving equipment was present to make the area accessible. As discussed in Section 2, PCB contamination associated with the AICO site has been remediated.

6.8.2 D/26 Inside - SWMU 31

See also Section 5.3

The D/26 Inside (SWMU 31) RFI Investigation determined the horizontal vertical extent of PCB contamination beneath D/26 proper by the completion of numerous soil borings with PCB samples collected at five foot intervals (Figure 6.18). This area is entirely covered by the portion of the main building that D/26 occupies. The investigation characterized the highest PCB concentrations at the base of the alluvium bedrock interface with up to 10,000 mg/kg of PCBs detected (DOE 1993a). In only two soil borings where significant PCB concentrations were found was this not the case. These two soil borings detected 560 mg/kg PCBs at 8.5 ft in D26-BH07 and 390 mg/kg PCBs at 18.5 ft in D26-BH10 (Figure 6.18). This is significant in that Outfall 002 storm sewer

lateral lines are located approximately 6 – 15 feet below ground surface. As previously discussed these lateral lines have been lined to mitigate potential PCB infiltration into the storm sewer system.

Results of the D/26 RFI show, that in locations where a large quantity of PCBs were deposited to the subsurface soils, a downward, vertical migration occurred over time, because the density of PCBs (1.4 to 1.5 dcc at 20°C) is greater than water (0.998 dcc at 20°C). This explains the apparent pooling of PCBs at the base of the alluvium and top of the bedrock. Indeed, PCB concentrations observed in D26-BH06 correlate with a reported spill that occurred as a result of an expansion joint failure in 1969 at this location (personal communication from D. Floersch, Allied Signal, Inc., Kansas City, Mo., with S. C. Hall, ORNL-GJ, 1990). In boreholes D26-BH07 and D26-BH10 where PCB concentrations are highest closer to the surface (i.e., 8.5 and 18.5 ft), it is believed that the mass of PCBs deposited to the subsurface soils was insufficient to break through the surface tension of the groundwater and migrate to the base of the alluvium.

6.8.3 D/26 Outside - SWMU 12

See also Section 5.4

SWMU 12, D/26 outside is the area between the main building and former Plating Building foundation walls and was investigated as a part of the Plating Building RFI (DOE 1993b). The D/26 heat transfer fluid was routed in piping attached to the outside main building wall that ran from the therminol heat transfer system to presses inside D/26 (Figure 6.17). The D/26 Outside SWMU was investigated under the Plating Building RFI (DOE 1993b).

The Plating Building RFI investigated four SWMUs: SWMU 9 - Plating Building Area and Acid and Alkaline Tanks, SWMU 10 - Waste Oil Tank Under North End of the Plating Building SWMU 11 - Substation 18 North of the former Plating Building and SWMU 12 - Department 26 (D/26) Outside (Figure 6.14). All of the above locations, with the exception of SWMU 9, had the potential to release PCBs to surrounding soils.

The area of PCB contamination towards the north end of the Plating Building appears to be related to a variety of potential sources including previous PCB releases near the Substation 18 pad and sump, leakage from the sand-filled waste oil tank, the 1969 spill from the Hydrotherm piping system (and other possible releases from this system), and activity in D/26. The irregular and sometimes discontinuous distribution of PCB contamination determined by this RFI can be explained by two general factors. First, as stated above, a number of probable sources exist or have existed in the immediate area. Each would have released contamination over time at different point locations, at different rates of release, and by different media (i.e., Hydrotherm fluid, transformer fluid, etc.) These factors alone would contribute to an irregular and discontinuous contaminant distribution. The other major factor involves any heterogeneity of the subsurface, as much of the surrounding soils are comprised of fill and various underground utilities. The majority of PCB contamination characterized by the Plating Building RFI is associated with the D/26 Outside area (SWMU 12) and to a lesser extent the Waste Oil Tank (SWMU 10).

Figure 6.18
D/26 location and RFI Soil Borings

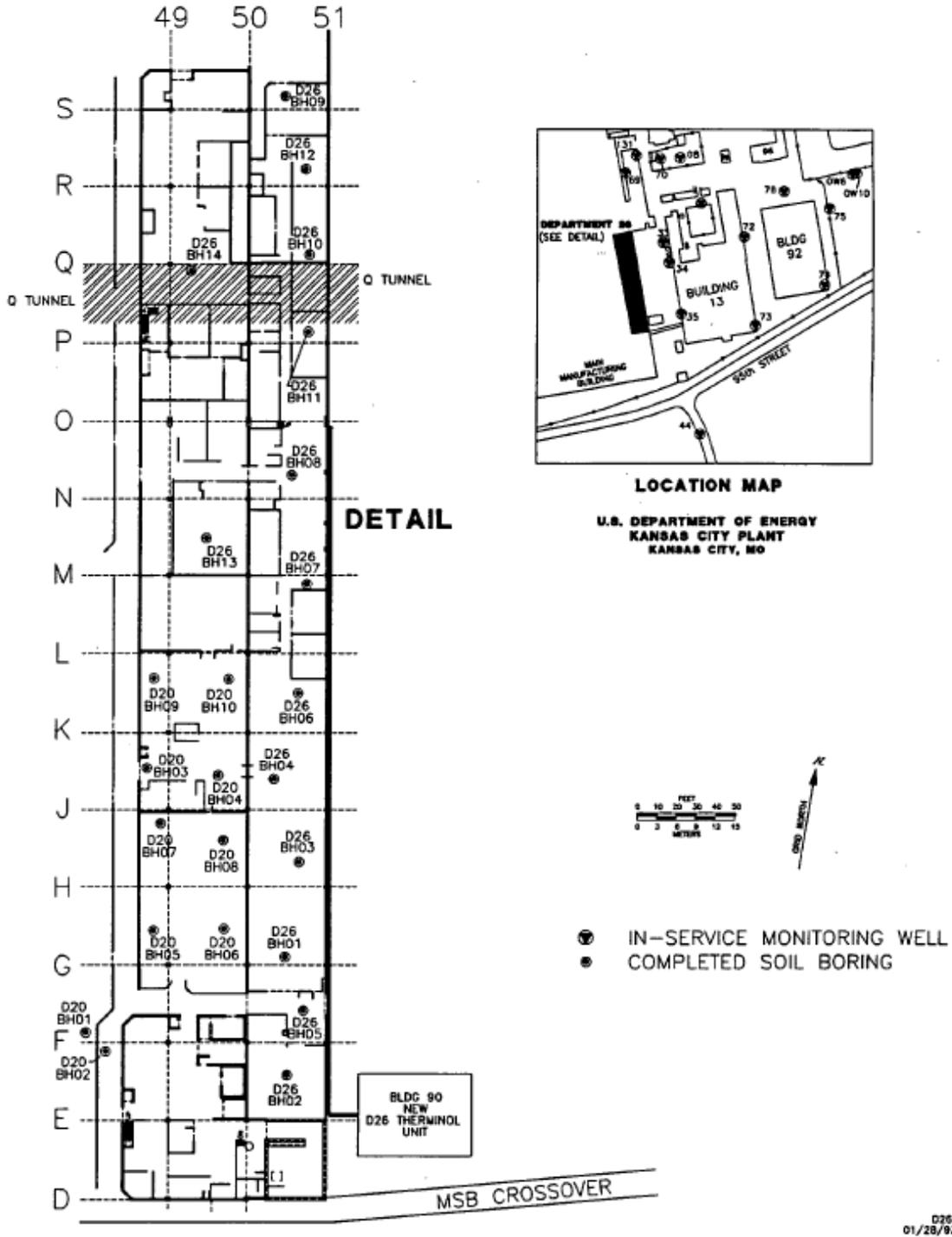
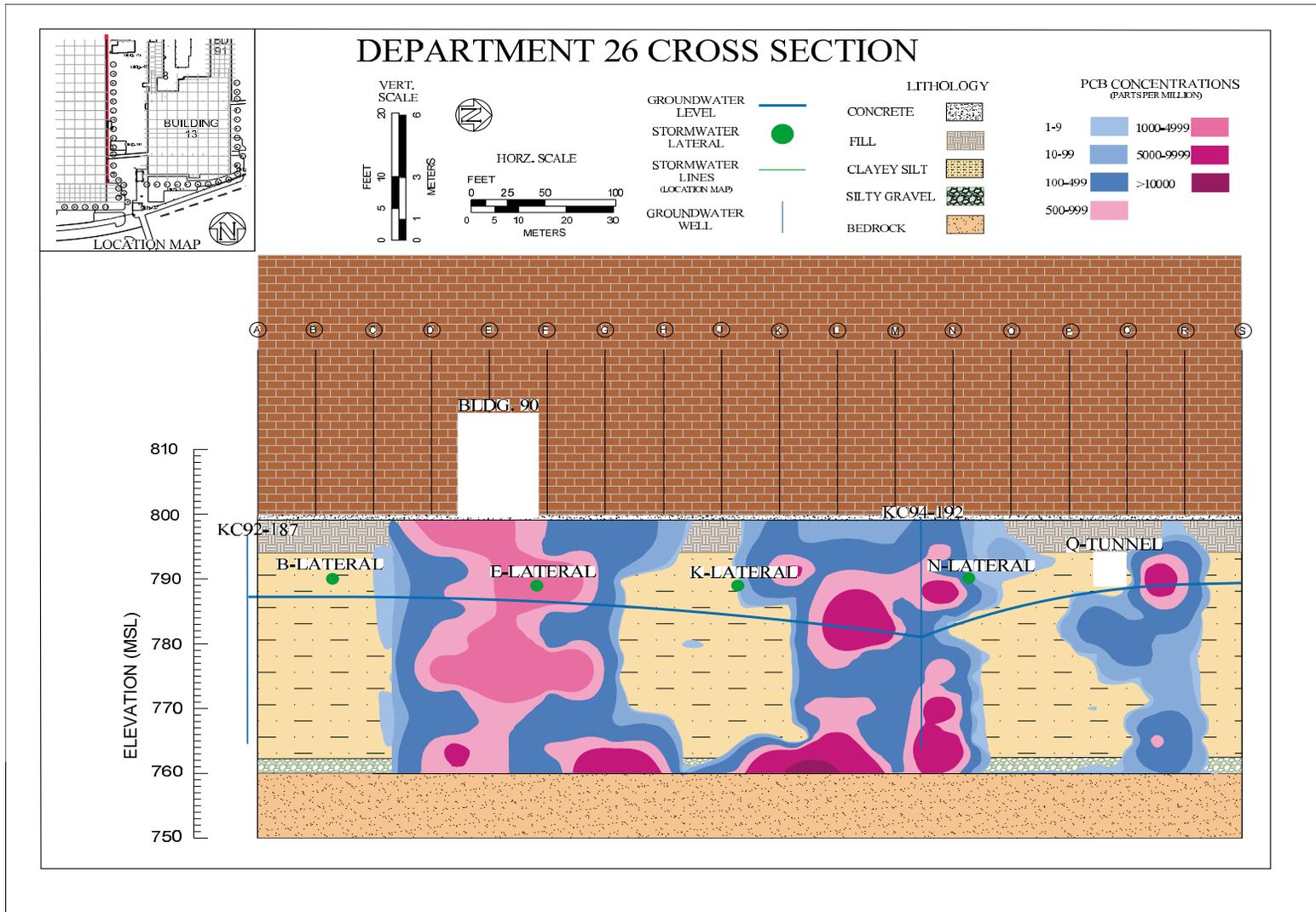


Figure 6.19



6.8.4 95th Terrace (SWMU 42)

See also Section 5.5

The 95th Terrace site is immediately adjacent to the AICO site. A steep embankment at the east side of AICO prevented drilling equipment from working in that area during AICO RFI fieldwork creating a data gap in that the extent of contamination in the direction of 95th Terrace could not be characterized. The data gap was acknowledged, and additional subsurface soil sampling was deferred until the AICO CMI phase in 1993, when earthmoving equipment was present allowing access to this area. Additional soil borings completed in this area identified additional PCB contamination along the ancestral channel of Indian Creek. Outfall 002 storm sewer piping was extended in 1969 – 1970 when Bannister Road was constructed. The storm sewer extension was essentially installed in the ancestral channel. Figure 6.16 depicts the remaining PCB contamination in this area and the PCB contamination already removed as a part of the AICO Corrective Measures Implementation (CMI). The 95th Terrace RFI Report (DOE 2000) estimated that approximately 7,897 kg of PCBs are present in 95th Terrace Soils. The maximum PCB concentration in soil was 8,300 mg/kg just above bedrock. Figure 6.19 provides a cross section of PCB contamination associated with the 95th Terrace Site.

6.8.5 Other Historic Investigations

Other non-RCRA investigations have also been performed with relevancy to the occurrence of PCBs in Outfall 002. Forty stream sediment samples were collected in 1985 in the vicinity of the new 002 Outfall with PCB concentrations ranging from 0.01 mg/kg to 440 mg/kg (Fleischhauer et al. 1987). In 1987 PCB concentrations in Indian Creek sediments and soil in the vicinity of the new 002 Outfall were measured at concentrations up to 792 mg/kg and 162 mg/kg (ORNL 1988). Contamination of Indian Creek sediment and surrounding soils is believed to be the result of the 1971 D/26 PCB spill. Fish tissue samples (sunfish and catfish) were collected from Indian Creek and Blue River in 1991, 1992, 1993, and 1998 and summary bioaccumulation reports published (Ashwood et al., 1993, 1994, 1998 and Southworth et al. 1992). Both sunfish and catfish had PCB tissue levels below the FDA (1984) permissible consumptive fish and shellfish tissue concentration of 2 µg/g with the exception of one green sunfish collected during the 1993 study.

During 1999 and 2000 an apparent oil stain on the interior of the 002 box culvert was sampled by scraping material from the concrete surface of the culvert. Although this “stain” had been previously wipe sampled with no PCBs detected this sample event detected significant PCB levels with up to 82,000 ppm of PCBs. As a result, the KCP researched technologies to mitigate PCBs associated with this area of staining within the storm sewer piping. The Outfall 002 Interim Measures Report (DOE 2003) provides a detailed description of the corrective action associated with this area of contamination.

During 2001 the KCP video surveyed the B, E, K, N, and T storm sewer laterals from the main trunk line to the 50 ½ column manholes to determine the physical condition of these lines which had previously been In-Situ Form lined. This investigation did not identify any apparent defects in the liner system.

6.9 Corrective Actions

6.9.1 Previous Remediation

The occurrence of PCBs in stormwater is associated with historic PCB releases that are also covered under the KCP’s RCRA Hazardous Waste Management Facility permit also referred to as the RCRA Part B Post Closure Permit. The Post Closure Permit governs the investigation and clean-up of legacy hazardous waste releases associated with plant operations. These releases occurred in the 1940’s to the early 1970’s timeframe. PCBs were used at the KCP as a heat transfer fluid in plastic injection molding operations. Notable spills of PCB heat transfer fluid occurred in 1969 and 1971 (DOE 1993). These spills were cleaned up according to industry practice at the time of the release; however, soils beneath the main building were contaminated. As a result, PCB contaminated soils remain beneath the MMB (Figure 6.19). PCBs are no longer used at the KCP. Portions of the Outfall 002 storm sewer run through or very near the area of PCB contaminated soils. Despite efforts to seal these lines minute quantities of PCBs have the potential to migrate into the storm sewer system and may then be discharged through Outfall 002.

The KCP has removed accessible areas of PCB contaminated soils; however, PCB contamination beneath the MMB is inaccessible. Non-intrusive means of remediation have been considered and none have been identified that are capable of removing the area

of contamination beneath the building (DOE 2003). Corrective actions related to investigation and cleanup of past contaminant release sites at the KCP are covered under the site's RCRA Hazardous Waste Management Facility permit. Numerous actions to identify and remediate the occurrence of PCBs at the KCP have been completed with EPA and MDNR oversight and approval (DOE 2003) and are summarized below.

Outfall 002 Corrective Actions

- 1983 - Infiltration and Inflow Study
- 1984 - Modified manholes with debris traps. Cleaned Outfall 002 12/84
- 1985 - Insituform lined K lateral.
- 1987 - PCB heat transfer piping and oil replaced. Cleaned Outfall.
- 1988
 - ✓ Insituform lined B, E, N, T and W laterals and trunk line from southeast building corner to AICO
 - ✓ Sediment and debris plus a 320 ft. section of 60 in. corrugated metal pipe and grout removed
 - ✓ Outfall 002 Raceway remediated. 1600 tons of PCB contaminated soil removed. Clean-up level 4 mg/kg
 - ✓ Lined manholes to prevent PCB infiltration
- 1991 - Grout sealed box culvert joints (AICO to outfall)
- 1993 - Abandoned Indian Creek Outfall remediated. 27,120 tons of PCB contaminated soil removed
- 1995 - Waste Oil Tank at former Plating Building site removed. 1,600 tons of PCB contaminated soil and 5,000 gal of oil removed
- January 1996 - Cleaned storm sewer
- 1997
 - ✓ Cleaned storm sewer and raceway
 - ✓ D/26 Pipe Gallery remediation. 2,701 tons of PCB contaminated soil removed
- 1998 - Cleaned storm sewer
- 1999 - Cleaned storm sewer
- 2000 - Encapsulated PCB oil stain - AICO to flap gate
- 2001 - Cleaned storm sewer, grout injection work, and camera surveys of lateral lines
- 2002
 - ✓ Cleaned storm sewer (7.63 tons, ~ 1/3 dewatering agent), identified roof PCB contamination and developed SOW to address
 - ✓ Bioaccumulation fieldwork completed.
- 2003
 - ✓ Bioaccumulation study
 - ✓ Rerouted several D/26 roof drains
 - ✓ Cleaned main trunk line of Outfall 002
 - ✓ Removed PCB contaminated tar coating on roof structures
 - ✓ Inspected and sealed Outfall 002 lateral lines
 - ✓ Grout injected several infiltration points and repaired epoxy coating in box culvert
 - ✓ Installed / evaluated passive filtration system.

- 2004
 - ✓ Install Access Restriction at Outfall 002. Other activities included ongoing investigations to characterize potential source areas
 - ✓ Clean Outfall 002 main trunk line
 - ✓ Reroute Outfall 002 base flow
 - ✓ Additional SPMD investigations
- 2005
 - ✓ Annual 002 inspection completed - cleaning not required.
 - ✓ Grout injected seeps in box culvert
 - ✓ Additional SPMD investigations conducted
 - ✓ Bioaccumulation Study - final report July 2006
- 2006
 - ✓ Annual 002 inspection completed - cleaning not required
 - ✓ Lined main trunk line from C60R-05 to MH C42R-13
- 2008
 - ✓ Annual 002 inspection completed - cleaning not required
 - ✓ Bioaccumulation Study – final report December 2008
 - ✓ Grout injected Outfall 002 box culvert floor joints
- 2009
 - ✓ Annual 002 inspection completed - cleaning not required
 - ✓ Liner repairs to the section of pipe immediately upstream of the former Abandoned Indian Creek Outfall were implemented on a temporary basis to address a section of liner approximately 50 ft. in length that had heaved along the longitudinal axis and cracked. This section of liner has been temporarily sealed and a permanent repair is in design.
- 2010
 - ✓ Annual 002 inspection completed – cleaning not required
 - ✓ Section of damaged liner noted above (2009) was replaced. A total of approximately 150 feet of storm sewer pipe was replaced. In addition, another 150 feet of existing liner was removed and replaced with a new pipe liner system.

6.9.2 Abandoned Indian Creek Outfall (SWMU 14)

See also Section 5.2

A large PCB remedial project was undertaken in 1993 at AICO where 27,210 tons of PCB contaminated material (up to 9,000 mg/kg) were removed for off-site disposal. PCBs at this location were primarily the result of the 1969 spill at the old 002 Outfall (Figure 6.13). Clean fill was used to restore the area to grade.

This project did not reduce PCB levels in stormwater discharges from Outfall 002 (Figure 6.12). Efforts to isolate Outfall 002 storm sewer system piping by grout injection of pipe joints and other efforts to install liner system on the inside of piping had effectively precluded the migration of contaminants associated with the

AICO site into the storm sewer system. Therefore, removing PCB contaminated soils from around storm sewer piping had little, if any, affect.

6.9.3 Department 26 (SWMUs 12 and 31)

See also Sections 5.3 and 5.4

Two interim measure soil removal projects were completed in 1995 and 1997 in the Plating Building area (Figure 6.14). The 1995 Plating Building Waste Oil Tank Interim Measure (DOE 1995) included removal of a waste oil tank and an electrical substation, both of which were located above Outfall 002 storm sewer laterals. The project treated 20,000 gal of contaminated water from the excavation, sent 5,000 gal of oil to an incinerator, sent 100 tons of non-hazardous concrete rubble and debris to a solid waste landfill, and sent 1100 tons of RCRA/Toxic Substances Control Act of 1976 (TSCA) waste to a RCRA/TSCA landfill. The steel waste oil tank was split in half to facilitate cleaning and ultimately was recycled as scrap metal.

SWMU 12, D/26 outside was the area between the main building and Plating Building foundation walls and was investigated as a part of the Plating Building RFI (DOE 1993c). The D/26 heat transfer fluid was routed in piping attached to the outside main building wall that ran from the therminol heat transfer system to presses inside D/26 (Figure 6.17). Failures in this piping system in 1969 and 1971 resulted in the release of PCB hydrotherm oil. The 1997 Pipe Gallery Interim Measure (DOE 1997) removed over 2,701 tons of RCRA/TSCA waste, 100 tons of solid waste, and 1286 ft of piping. An estimated 75,000 gal of water was also treated during the project. This project demolished the west wall of the former plating building which served as a part of the Therminol system secondary containment and excavated contaminated soils in this area down to the main building footings allowing PCB contaminated soils to be removed from around storm sewer lateral lines. PCB contaminated soils beneath the main building are not accessible and were, therefore, not addressed as a part of the Pipe Gallery Interim Measures project.

6.9.4 Outfall 002 Raceway

During 1989 the KCP completed a project to remove PCB contaminated soil at the Outfall 002 Raceway. Prior to 1989 the “raceway” was essentially a ditch with a concrete bottom. The concrete and surrounding PCB contaminated soils were removed during this project and

a new concrete raceway constructed. The results of this effort are summarized in the Confirmation Study for Restoration of Outfall 002 Raceway (IT Corporation June 1989). It should be noted that PCBs were regulated under TSCA, thus, the KCP could perform remediation without formal RCRA plans.

Results of the soil sampling are summarized in Table 6.5. Sample results determined that PCBs consisted primarily of Aroclor 1242. Only grids 1, 2, and 3 of Area A met the 1.0 ppm PCB cleanup level with the specified amount of excavation. With further excavation, grid 5 also achieved the 1.0 ppm cleanup level. The five remaining remaining grids all had verification samples in the range of 2 to 4 ppm. Since these five samples were all taken at 4 or more feet below original ground levels and were to be 3 or more feet below finished grade, approval was obtained to leave soils with PCB concentrations of less than 10 ppm as long as they were not subject to migration. It was determined that placement of 3 to 4 feet of compacted backfill and seeded/mulched top soil constituted adequate protection against migration. No soil samples with PCB concentrations above 10 ppm were found during the verification sampling. Concentration as high as 792 ppm had been found during the site investigation.

By combining results of the 37 site investigation borings (see Figure 6.20) and the 15 composite verification samples, it can be concluded that only a few isolated locations of soils with PCB levels of 1 to 4 ppm were left in place on the west side of the new channel liner for the raceway. To the east of the raceway, PCBs at 1 to 4 ppm in soil below the backfill possibly extend back 20 feet from the concrete liner . It is also likely that PCB concentrations of less than 10 ppm remain i n several areas under the backfill down to bedrock as far as 70 feet due east of the central portion of the new channel liner . There are no samples indicating PCBs above 1 ppm remaining in any other areas of the 002 Outfall construction site. As previously mentioned, the Department of Energy, Kansas City Area Office, negotiated the approval f o r these low concentrations of PCBs to remain in place with EPA Region VII TSCA personnel.

Table 6.5

TABLE 2. PCB CONCENTRATIONS IN SOIL SAMPLES

Sample No.	Date	Area	Grid	PCB Conc., ppm	Comments
1	11-6	A	1	<1.0	
2	11-6	A	2	<1.0	
3	11-6	A	3	<1.0	
4	11-6	A	4	2.7	
5	11-6	A	5	2.3	
6	11-6	B	6	2.5	
99	11-6	A	3	<1.0	field split of 3
rinsate	11-6	B	6	<0.001	
4A	11-7	A	4	2.6	
5A	11-7	A	5	3.0	
6A	11-7	B	6	2.0	
rinsate	11-7	B	6	<0.001	
4B	11-11	A	4	3.7	
5B	11-11	A	5	1.0	
6B	11-11	B	6	2.2	
99B	11-11	A	5	<1.0	field split of 5B
-	11-11	B	6	1.8	lab split of 6B
7	11-15	C	7	2.7	
8	11-15	C	8	2.1	
9	11-15	C	9	4.1	

6.9.5 Post Closure Permit Driven Actions

The 95th Terrace Corrective Measures Study (CMS) and related Statement of Basis (incorporated into the RCRA Post Closure Permit in a September 29, 2006, permit modification) evaluated several corrective action alternatives related to PCB contaminated sediments associated with stormwater discharges from outfall 002. The approved alternative includes the following corrective actions related to contaminated sediments:

- Semi-Annual sampling of surface waters for PCB analysis by EPA Method 1668.
- Semi-Annual internal inspection of the outfall 002 storm sewer system to identify areas of sediment accumulation and removal of sediments if significant deposits are identified.
- Semi-Annual internal inspection of the Outfall 002 storm sewer to inspect the condition of the pipe and identify any areas of infiltration and mitigation of any infiltration areas.
- Installation and maintenance of an access restriction over the Outfall 002 raceway.

- Posting of notification signs near the Outfall 002 flap gate.
- Indian Creek sediment sampling and calculation of the Hazard Index for the recreational user for the ingestion and dermal contact pathways.

6.9.6 Base Flow Diversion System

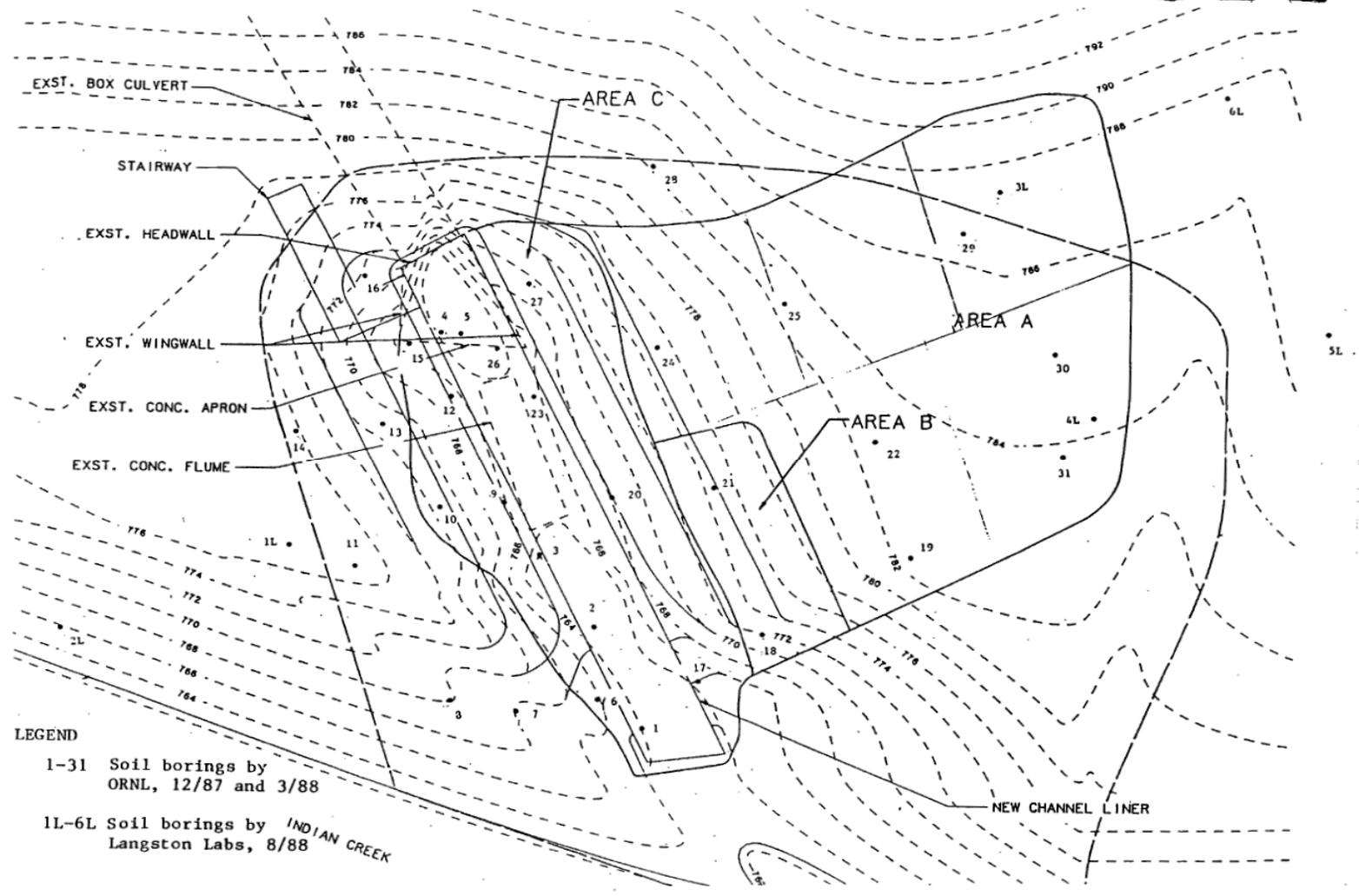
As a result of significant flow reductions in Outfall 002 the KCP identified a project that would divert base flows (i.e., air conditioning condensate and fire protection system test flows) in Outfall 002 and route this flow to the Groundwater Treatment System (GTS). The GTS has historically received low levels of PCBs and is permitted to receive and treat groundwater contaminated with PCBs and VOCs. During 2005 the KCP completed construction of the Outfall 002 Diversion System. This system diverts all non-rain event flow (base flow) in Outfall 002 to the GTS. Base flow rates in Outfall 002 are approximately 5 gpm. Outfall 002 base flows are diverted at manhole MHC60R-05 (Figure 6.21). The system is capable of rerouting up to 15 gpm. Once flows exceed 15 gpm a high level float shuts off the pump. As flows return to less than 15 gpm in the outfall the diversion pump is automatically actuated.

The location of the diversion system ensures that base flow will be captured as the majority of the Outfall 002 watershed is upstream of this location. There are no dry weather inputs downstream of this location. Operation of the 002 diversion system results in discharges from Outfall 002 during precipitation events only. Outfall 002 rain event flows have been characterized and typically do not detect PCBs. Downstream of MHC60R-05 storm sewer flows are related to overland flow such as parking lot drains. Therefore, the diversion system captures non-rain event related flow within Outfall 002. The Outfall 002 diversion system has effectively served reduced PCB discharges. The system operated in a continuous mode during 2012.

An internal inspection was conducted June 21, 2012. Active areas of infiltration were not observed during this inspection and there were no significant areas of sediment accumulation within the piping system

The second semi-annual inspection was conducted December 12, 2012. Areas of sediment accumulation were noted in areas of the storm sewer piping system. These sediments are typically contaminated with approximately 0.5 ppm PCBs. Two areas of potential infiltration were observed during the inspection. These locations will be trended during future inspections to determine if additional corrective actions are warranted.

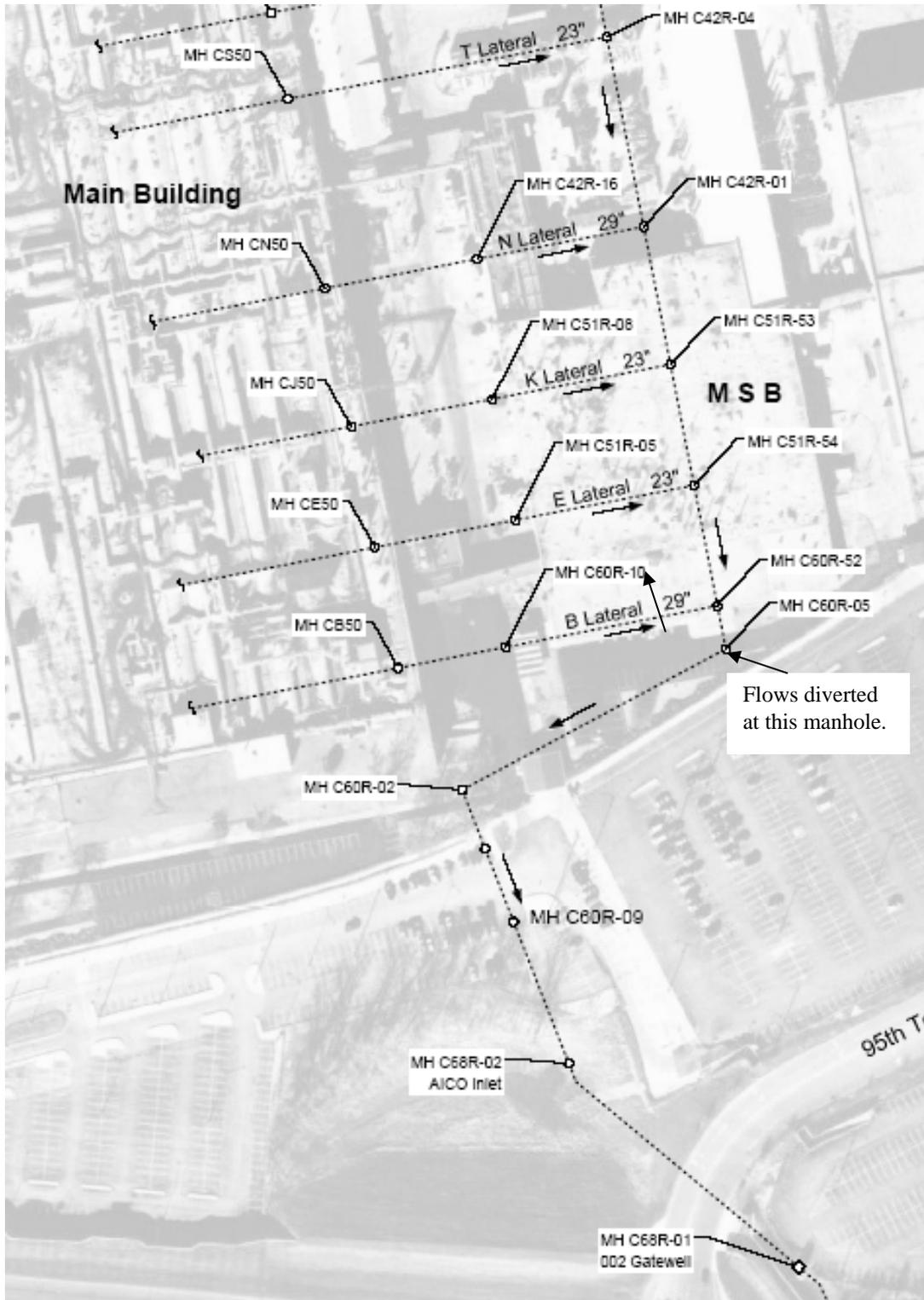
Figure 6.20



LEGEND
1-31 Soil borings by
ORNL, 12/87 and 3/88
1L-6L Soil borings by INDIAN CREEK
Langston Labs, 8/88

Figure 4. Locations of Excavation Areas A, B, and C

Figure 6.21
Location of Outfall 002 Diversion System



6.9.7 Outfall 002 Sediment

The Post Closure permit requires collection of weekly sediment samples at the Outfall 002 sluice gate. There are numerous weeks throughout the year when sufficient sediment is not available for sampling. The majority of the Outfall 002 watershed is comprised of hard surfaces (i.e., buildings and paved areas), therefore, very few sources of sediment discharge to the storm sewer are available. Sediments deposited within the storm sewer system are comprised mainly of roof sand that is abraded off the building's composite roof. Sediments deposited within the storm sewer act as "sinks" where PCBs migrating on colloidal sized particles are entrapped by the sediments. Appendix F of the Sampling and Analysis Plan was modified with approval of the 95th Terrace CMS changing the sediment sampling frequency at the sluice gate to a monthly interval. Sufficient sediment was collected and analyzed on the following occasions during the year:

Outfall 002 Sediment Sample Results

Results in mg/kg (detection limit dependent upon volume of sample available)

Date / Aroclor	1016	1221	1232	1242	1248	1254	1260	Total
12/18/12	<0.101	<0.101	<0.101	0.442	<0.101	<0.101	<0.101	<0.101

6.9.8 Access Restriction Over Outfall 002 Raceway

The 95th Terrace CMS and related Statement of Basis required the installation and maintenance of an access restriction over the outfall 002 raceway. The Outfall 002 discharge point to Indian Creek consists of a flap gate structure, which is essentially a large hinged door to allow flow to discharge from the storm sewer. When Indian Creek floods the flap gate prevents water from backing up into the storm sewer system. After the water exits the flap gate it enters a raceway, essentially a rectangular pipe with no top, and is discharged to Indian Creek. The raceway is approximately 150 feet long. The 95th Terrace Risk Assessment identified PCB contaminated sediments that accumulate in the raceway as an area of higher potential risk than the surrounding area (i.e., sediments in Indian Creek). Sediments are periodically removed from the raceway. In order to reduce the potential risk posed by PCB contaminated sediments that accumulate in the raceway an access restriction was installed over the raceway August 2004 (Figure 6.22 6.24.).

Figure 6.22

Outfall 002 Raceway looking towards flap gate prior to access restriction installation



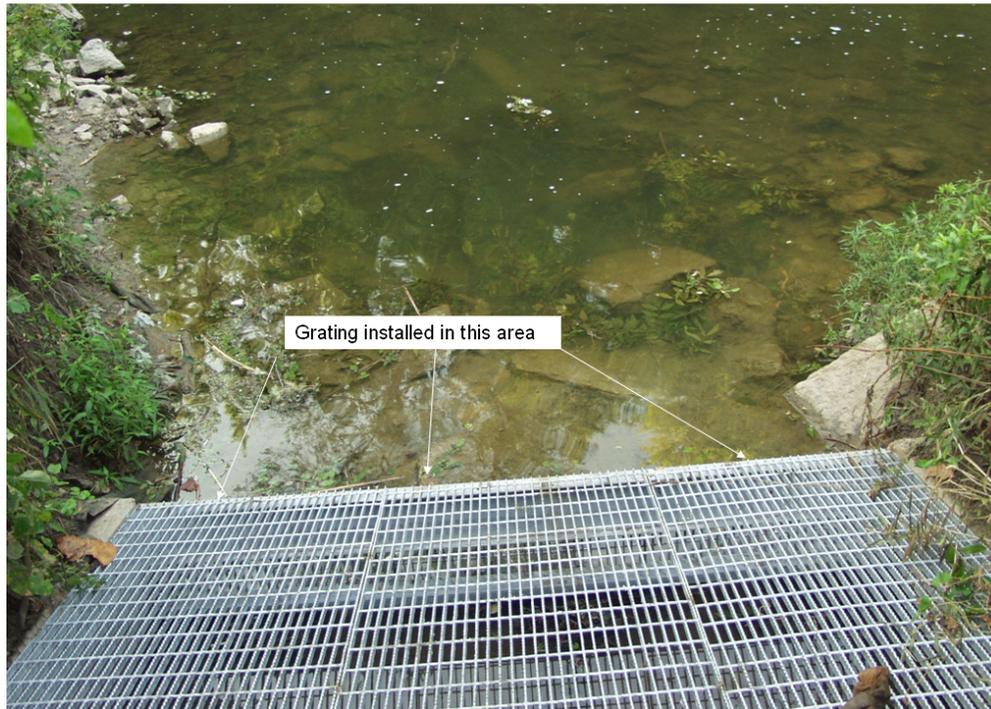
Figure 6.23

Outfall 002 Raceway with access restriction installed looking towards flap gate.



Figure 6.24

Outfall 002 Raceway looking towards Indian Creek



The KCP uses a maintenance scheduling program to manage preventive maintenance activities. Inspection of the access restriction is scheduled through this system on a quarterly basis.

6.9.9 Notification Signs

The 95th Terr CMS and related Statement of Basis required the installation and maintenance of notification signs near Outfall 002. Sign configuration (wording, size, and layout) was previously agreed to by MDNR and KCP representatives. These signs provide notification that fish from the area should not be consumed, and that drinking the water and wading and swimming are not allowed. These signs are also inspected on a quarterly basis which is facilitated through the maintenance scheduling program as discussed above.

6.10 Outfall 002 Aqueous PCB Mass

The cumulative effect of corrective actions taken to date can be summarized, in one way, by reviewing the data trend associated with the aqueous mass of PCBs discharged through Outfall 002 (Figures 6.12 and 6.25). The aqueous mass calculation must,

however, be qualified as means of viewing the data trend and not as a true calculation of the mass discharged in association with the occurrence of PCBs in Outfall 002. There are a number of highly variable parameters used in the mass calculation (e.g., analytical detection limit issues and associated use of one half the detection limit when the sample is otherwise non-detect) that limit the ability to accurately calculate the volume of PCBs in stormwater discharges. Therefore, calculation of the actual volume of PCBs discharged cannot truly be achieved.

Since 2003 there has been a steady downward trend in the volume of aqueous PCBs discharged through Outfall 002. The trend graph starts with 2001 since this is the last year prior to efforts initiated to reroute single pass cooling water discharges to the storm sewer system. Prior to 2002, Outfall 002 received approximately 100 gallons per minute (gpm) of single pass cooling water discharges. The KCP's November 1999 stormwater permit (MSOP 0004863) contained a total residual chlorine limit and related compliance schedule. Since single pass cooling water is made-up from drinking water, which contains residual chlorine, the KCP reconfigured processes requiring cooling water to utilize the plant's closed loop chilled water system or, in a few instances, rerouted the single pass cooling water to the sanitary sewer with city approval.

As a result of efforts to stop the discharge of single pass cooling water to the storm sewer system the base flow rate (i.e., non-rain event flow comprised of single pass cooling water and air conditioning condensate) went from approximately 100 gpm in 2001 to 5-10 gpm in 2004. This reduction in base flow rate allowed the KCP to capture the remaining base flow in Outfall 002 (see previous discussion), which contained an approximate average of 0.5 µg/L total PCBs, and reroute this water to the Groundwater Treatment System where the PCBs are treated and discharged to the sanitary sewer. This system (Outfall 002 reroute system) became operational March 2005 and has significantly reduced the aqueous mass of PCBs discharged through the Outfall 002 system. Figure 6.12 provides a trend graph of weekly PCB results collected from the Outfall 002 compliance point, and the approximate single pass cooling water flow rate. As can be seen on Figure 6.12 as single pass cooling water was reduced PCB trends became very erratic. Numerous corrective actions were also occurring during this period

that cleaned and sealed storm sewer piping. When the 002 reroute system became operational March of 2005 the occurrence of PCBs in stormwater discharges from Outfall 002 was greatly reduced.

The methodology employed to calculate the aqueous mass of PCBs discharged through Outfall 002 conservatively estimates mass by using one half the detection limit when the result was non-detect for PCBs. The analytical lab used by the KCP has a 0.1 µg/L detection limit and a 0.5 µg/L quantification limit for PCB analysis. Therefore, 0.05 µg/L is assumed present in the discharge when sample results are non-detect for PCBs. During years when higher annual rainfall is received related PCB mass estimates are higher due to the assumption that up to one half the detection limit is present even though the analysis did not detect any PCBs. During 2007 only 5.2 grams (0.0115141 lbs) of PCBs were discharged in the aqueous phase. The only PCB detections during 2007 were the two sample events that employed Method 1668 analysis (Table 6.6). During 2008 8.85 grams (0.01955 lbs) of PCBs were discharged in the aqueous phase. There were only three sample events that detected PCBs during 2008. The two events that employed Method 1668 analysis and one regular sample event that utilized Method 8082 analysis detected 0.71 µg/L of total PCBs on March 15th. During 2009 only 6.15 grams (0.013559 lbs) of PCBs were discharged in the aqueous phase. The only PCB detections during 2009 were the two sample events that employed Method 1668 analysis. During the other 34 sample events PCBs were not detected, however, one half the detection limit (0.05 µg/L) was used when calculating the mass of PCBs in the discharge. During 2010 only 4.52 grams (0.00996 lbs) of PCBs were discharged in the aqueous phase. The only PCB detections during 2010 were the two sample events that employed Method 1668 analysis. During the other 33 sample events PCBs were not detected, however, one half the detection limit (0.05 µg/L) was used when calculating the mass of PCBs in the discharge. During 2011 only 4.13 grams (0.009114 lbs) of PCBs were discharged in the aqueous phase. The only PCB detections during 2011 were the two sample events that employed Method 1668 analysis. During the other 33 sample events PCBs were not detected, however, one half the detection limit (0.05 µg/L) was used when calculating the mass of PCBs in the discharge. During 2012 only 6.09 grams (0.01342 lbs) of PCBs were

Figure 6.12
Outfall 002 PCB Trend Graph

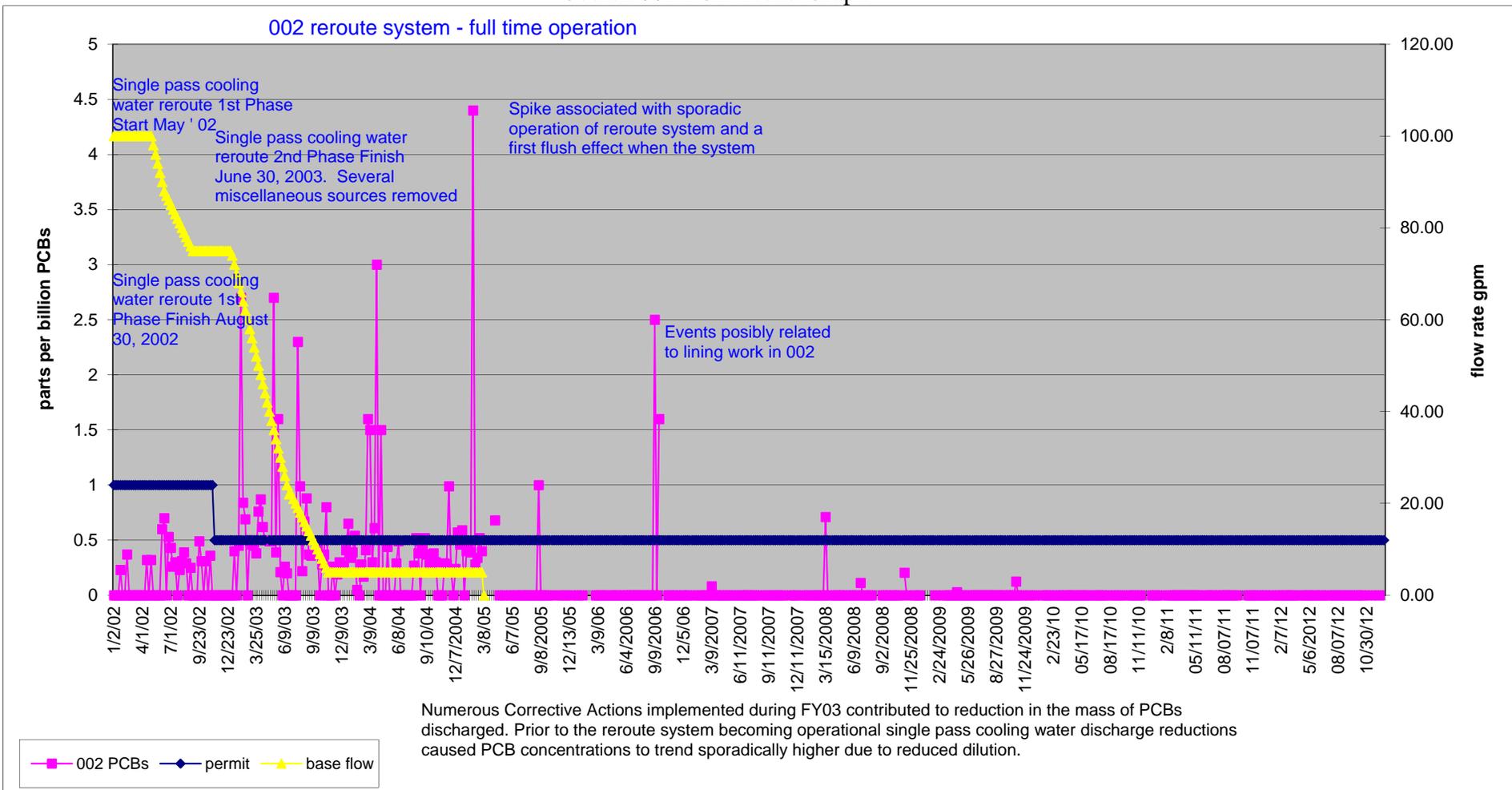
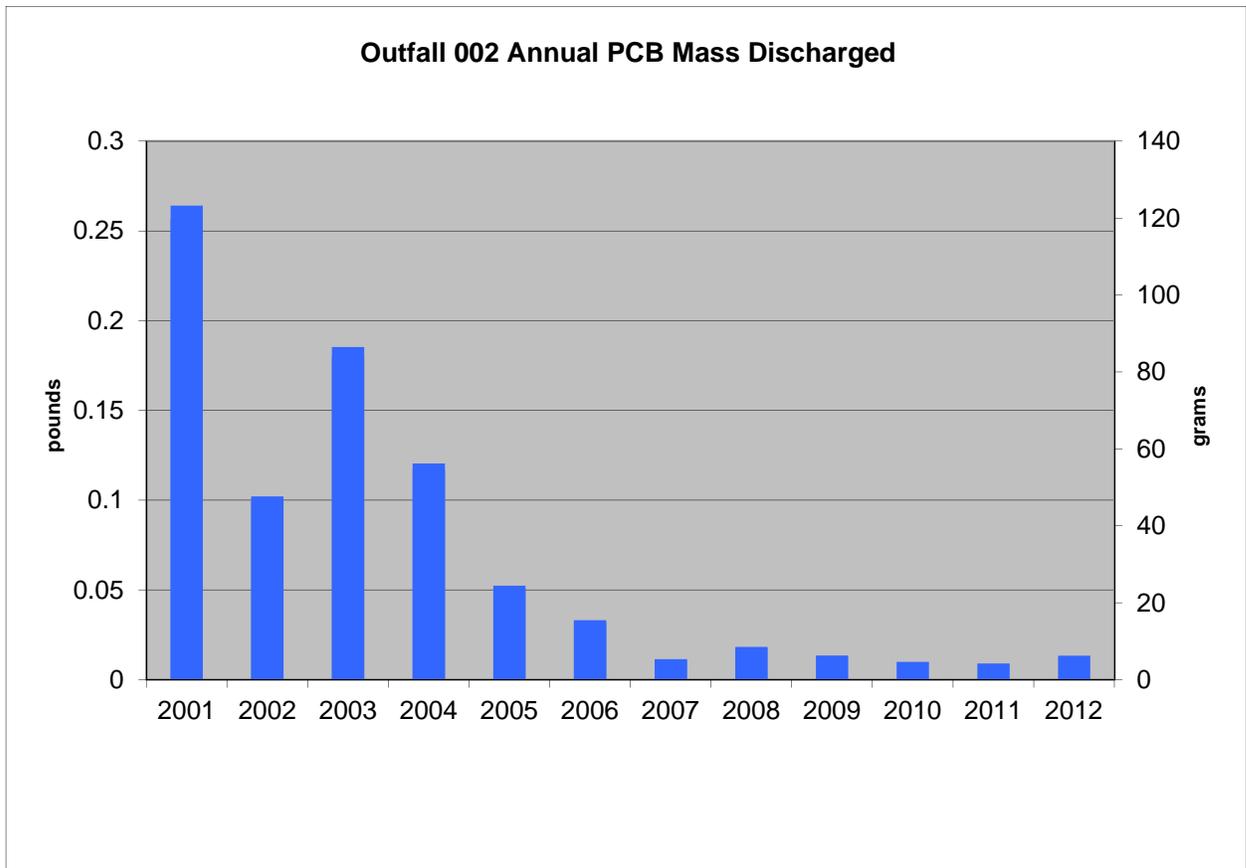


Figure 6.25
Outfall 002 Aqueous PCB Mass



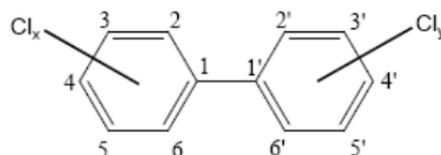
discharged in the aqueous phase. The only PCB detections during 2012 were the two sample events that employed Method 1668 analysis (Table 6.6). During the other 30 sample events PCBs were not detected, however, one half the detection limit ($0.05 \mu\text{g/L}$) was used when calculating the mass of PCBs in the discharge. Outfall 002 only discharges during rain events and is therefore, not sampled on a weekly basis when there is insufficient rainfall to bypass the reroute system.

6.11 PCB Sampling by Method 1668

The 95th Terrace Statement of Basis requires semi-annual sampling of six surface water locations near the KCP (Figure 6.7) for PCBs by EPA method 1668. Results from Method 1668 analysis are one of several analytical tools (e.g., bioaccumulation studies, semi-permeable membrane device sampling) employed by the KCP to characterize patterns of contamination in receiving streams near the KCP. The KCPs currently approved Sampling and Analysis Plan for Surface Water (Appendix F of the Sampling

and Analysis Plan – DOE 2008) requires annual sampling of surface water sites for PCBs by Method 1668. The Statement of Basis for the 95th Terrace Site, incorporated into the permit with the September 29, 2006, permit modification requires semi-annual sampling of surface water sites for PCBs by Method 1668. Surface water sites are sampled concurrently with semi-annual groundwater sample events which occurred during May and October of 2012.

Method 1668 provides low level quantification of PCB congeners and is considered cost prohibitive when routinely employed, therefore, this method is only used occasionally. Method 1668 provided reporting limits as low as 0.21 ng/L for certain congeners. PCBs are a class of chemical compounds in which 2–10 chlorine atoms are attached to the biphenyl molecule. Monochlorinated biphenyls (i.e., one chlorine atom attached to the biphenyl molecule) are often included when describing PCBs. The general chemical structure of chlorinated biphenyls is shown below.



It can be seen from the structure that a large number of chlorinated compounds are possible. The 209 possible compounds are called congeners. PCBs can also be categorized by degree of chlorination. The term “homolog” is used to refer to all PCBs with the same number of chlorines (e.g., trichlorobiphenyls). Homologs with different substitution patterns are referred to as isomers. For example, the dichlorophenyl homolog contains 12 isomers. Method 1668 is used to determine concentrations of the 209 possible PCB congeners and is capable of sub-nanogram per liter reporting limits.

Manufacturers marketed mixtures of PCBs under the trade name Aroclor. The Aroclors are identified by a four-digit numbering code in which the first two digits indicate the type of mixture and the last two digits indicate the approximate chlorine content by weight percent. Thus, Aroclor 1242 is a chlorinated biphenyl mixture of varying amounts of mono- through heptachlorinated homologs with an average chlorine content of 42%. The exception to this code is Aroclor 1016, which contains mono- through

hexachlorinated homologs with an average chlorine content of 41% (Hutzinger et al. 1974).

6.12 Semi-Annual Surface Water / Outfall Sample Stations

(Reference Figure 6.7)

Since 2007 the KCP has routinely sampled the six surface water sample stations on the Blue River and Indian Creek plus stormwater discharges from the four regulated outfalls for PCBs by Method 1668. Two sample stations on Boone Creek (a small tributary to the Blue River that borders the northeast portion of the Bannister Federal Complex) have been routinely sampled as a part of the surface water sampling effort since 2009. With the addition of the Boone Creek sites there are a total of eight surface water sampling stations. The surface water sample stations have been selected to “bracket” KCP stormwater outfalls (i.e., there is a sample station upstream and downstream of each outfall). The surface water sample stations provide PCB data from sites upstream of KCP stormwater discharges and from sample stations downstream of the KCP.

6.12.1 May 2012 1668 Sampling

Reference Figure 6.7 to locate the sample locations discussed in this section. Results from this round of sampling were, for the most part, consistent with the historic 1668 data set. Three out of the four KCP outfalls detected PCBs at levels within the historic range of results and Outfall 004 detected PCBs at a very low level. Table 6.6 provides total PCB concentrations derived from Method 1668 analysis from the four outfalls and surface water sample stations near the KCP. Outfall 001 detected 93.33 ng/L total PCBs, Outfall 002 detected 59.35ng/L total PCBs, Outfall 003 detected 15.87 ng/L total PCBs and Outfall 004 detected 3.97 ng/L total PCBs. With the exception of the Outfall 004 result results are within the historic range.

Two of the three surface water sample stations on the Blue River detected PCBs. Both sample stations on Boone Creek detected PCBs at concentrations at relatively significant levels when compared to results from other surface water sample stations.

Although none of the three Indian Creek sample stations detected PCBs fish tissue samples collected during numerous previous rounds of bioaccumulation sampling

demonstrate the presence of PCBs within the Indian Creek watershed both upstream and downstream of KCP stormwater discharges.

The upstream Blue River sample station (BRU) and the downstream Blue River sample station (BRD) detected PCBs. Sample station BRU, which serves as the upstream background sample station on the Blue River detected 0.236 ng/L total PCBs which is within the range of historic results. The BRU sample station detects PCBs approximately 50% of the time when sampled by Method 1668.

The BRD sample station downstream of all KCP discharges detected 1.48 ng/L of PCBs. The BRD sample station is impacted by PCBs contributed by a source located within the watershed of Boone Creek. Boone Creek runs along the northeast edge of the Bannister Federal Complex before discharging into the Blue River immediately south of the Prospect bridge. KCP Outfall 001 discharges into Boone Creek. Sample station BCU is located upstream of Outfall 001. The BCU sample station detected 94.93ng/L of total PCBs. The Boone Creek sample station located downstream of the Outfall 001 discharge detected 52.17 ng/L of total PCBs. Based on the historic data set for Boone Creek, it is apparent that a PCB source upstream of the KCP on Boone Creek adds to the PCB levels detected at the BRD sample station.

Table 6.6
Method 1668a Total PCB Sample Results (ng/L)
Reference Figure 5.1 for sample locations.

	ICU	003	004	ICDA	002	ICDB	ICBR	BRU	BCU	001	BCD	BRD	blank
8/04	<	6.591	<	<	354.3	0.45	<	9.8	20.6	ns	53.9	1.35	
5/06	<	19.56	<	<	63.98	<	<	0.54	ns	15.82	ns	5.66	
3/07	<	5.7	<	<	82.4	<	<	<	ns	16.2	ns	0.42	
8/07	<	16.78	<	<	41.545	<	<	0.685	122.67	14.61	77.3	4.397	<
6/08	0.711	22.22	2.89	0.70	112.43	5.936	0.91	1.22	ns	17.92	ns	1.58	3.632
10/08	<	8.429	0.51	<	205.35	<	<	<	ns	15.31	ns	1.19	3.935
5/09	<	26.795	<	<	29.75	<	<	<	ns	11.295	ns	14.162	<
10/09	<	14.324	<	<	125.51	0.248	<	<	23.1	25.157	26.8	0.829	<
5/10	<	29.217	<	<	33.48	0.571	<	0.234	26.89	18.636	67.34	1.292	<
9/10	<	36.382	0.476	0.948	18.082	0.27	0.215	0.641	41.25	10.842	22.42	2.909	<
5/11	<	4.59	<	<	14.6	<	<	0.275	23.5	15.98	12.51	1.8	<
10/11	<	<	<	<	195.5	<	<	0.287	62.1	4.7	56.3	4.23	<
5/9/12	<	15.874	3.978	<	59.351	<	<	0.236	94.934	93.33	52.173	1.488	<
10/24/12	0.983	16.86	0.683	0.876	534.296	0.688	0.314	0.982	22.581	20.435	19.441	4.058	0.743

ns – no sample result is less than associated blank

Table 6.7 provides Method 1668 sample results for the May sample event for the four regulated outfalls and eight surface water sample stations by concentration. Table 6.8 provides the weight percent congener composition present in the sample. In order to compare the makeup of congeners present in the sample to the distribution of congeners in pure Aroclor 1242 the weight percent congener composition for Aroclor 1242 is also provided in Table 6.8. Historically, samples from Outfall 001 and 002 note a higher relative weight percent of the di, tri and tetrachlorobiphenyl homolog groups which is consistent with the homolog distribution of an Aroclor 1242 pattern. However, recently Outfall 002 has begun to exhibit a congener distribution pattern indicative of an Aroclor 1260 source with higher levels of the hexa and hepta homolog groups detected. During the May 2012 sample event 27 ng/L of the total PCB concentration of 59 ng/L was comprised of the hexa and hepta homolog groups.

Historically, Outfall 003 has noted a higher relative weight percent distribution of the hexa and heptachlorobiphenyl homolog groups which is likely associated with the historic Aroclor 1260 PCB source. With the exception of the mold heat transfer fluid spills (Aroclor 1242) serving as the historic source of PCBs in Outfall 002, and the transformer oil spill (Aroclor 1260) on the GSA side of the main building roof (GSA 2008) serving as the source of PCBs in Outfall 003, the true source of PCBs currently detected in surface water samples near the KCP is unknown. Sources of PCBs upstream or near the KCP are unknown, however, the occurrence of upstream sources of PCBs is demonstrated by 1668 analytical data and analysis conducted as a part of bioaccumulation studies. As discussed in bioaccumulation studies performed by the KCP, other sources of PCBs are present upstream and downstream of the KCP on Indian Creek and the Blue River (DOE 2006a, 2008a). Further complicating identification of the source as Aroclor 1242 or 1260 can be caused by affects associated with the transport mechanism and weathering of the original spill. Therefore, truly definitive statements regarding the type of PCB Aroclor associated with the original spill cannot be made.

Table 6.7
May 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754
PCB-001	ng/L	5/10/12	7.24	< 0.212	0.294	< 0.204	17.5	12.1	0.635	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-002	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	0.345	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-003	ng/L	5/10/12	1.26	< 0.212	0.311	0.387	0.716	0.743	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
Totals for Monochlorobiphenyl			8.500	0.000	0.605	0.732	18.216	12.843	0.635	0.000							
PCB-004	ng/L	5/10/12	14.4	1.75	< 0.204	< 0.204	18.800	21.3	0.853	0.236	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-005	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-006	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	0.672	0.862	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-007	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-008	ng/L	5/10/12	2.11	< 0.212	< 0.204	< 0.204	1.97	3.21	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-009	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-010	ng/L	5/10/12	0.96	< 0.212	< 0.204	< 0.204	1.46	1.29	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-011	ng/L	5/10/12	2.58	< 1.27	2.56	3	< 1.26	< 1.27	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-012	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	0.673	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-013	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.482	< 0.500	< 0.506
PCB-014	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-015	ng/L	5/10/12	5.57	1.21	< 0.204	< 0.204	1.67	4.53	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
Totals for Dichlorobiphenyl			25.620	2.960	2.560	3.000	24.572	31.865	0.853	0.236	0.000						
PCB-016	ng/L	5/10/12	0.707	0.4	< 0.204	< 0.204	0.272	0.479	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-017	ng/L	5/10/12	1.38	0.524	< 0.204	< 0.204	0.747	1.73	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-018	ng/L	5/10/12	2.02	1.09	< 0.407	< 0.407	0.746	1.18	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-019	ng/L	5/10/12	7.52	0.866	< 0.204	< 0.204	2.85	4.65	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-020	ng/L	5/10/12	7.65	3	< 0.407	< 0.407	1.1	4.33	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-021	ng/L	5/10/12	0.402	< 0.425	< 0.407	< 0.407	< 0.419	0.455	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-022	ng/L	5/10/12	2.59	0.985	< 0.204	< 0.204	0.395	1.39	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-023	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-024	ng/L	5/10/12	0.26	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-025	ng/L	5/10/12	0.487	< 0.212	< 0.204	< 0.204	< 0.21	0.502	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-026	ng/L	5/10/12	1	< 0.425	< 0.407	< 0.407	< 0.419	0.743	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-027	ng/L	5/10/12	1.17	0.293	< 0.204	< 0.204	0.428	0.993	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-028	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.482	< 0.500	< 0.506
PCB-029	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.482	< 0.500	< 0.506
PCB-030	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.482	< 0.500	< 0.506
PCB-031	ng/L	5/10/12	4.18	1.11	< 0.204	0.246	0.826	2.41	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253

OF001, OF003, OF004 sampled on 5/9/2012 OF002 sampled on 5/24/2012

Blank 32787 associated with SWBCD, SWBCU, SWBRDD, SWBRU, SWICBR, SWICDA, SWICDB, SWICU

Blank 32754 associated with OF001, OF003, OF004

Blank 32987 associated with OF002

Table 6.7
May 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754
PCB-032	ng/L	5/10/12	4.65	1.16	< 0.204	< 0.204	1.11	2.93	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-033	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.482	< 0.500	< 0.506
PCB-034	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-035	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-036	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-037	ng/L	5/10/12	1.32	0.659	< 0.204	< 0.204	0.213	1.05	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-038	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
PCB-039	ng/L	5/10/12	< 0.201	< 0.212	< 0.204	< 0.204	< 0.21	< 0.211	< 0.221	< 0.206	< 0.213	< 0.215	< 0.225	< 0.201	< 0.241	< 0.250	< 0.253
Totals for Trichlorobiphenyl			35.336	10.087	0.000	0.246	8.687	22.842	0.000								
PCB-040	ng/L	5/10/12	1.98	1.51	< 1.22	< 1.22	< 1.26	1.92	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-041	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-042	ng/L	5/10/12	1.04	0.671	< 0.407	< 0.407	< 0.419	1.07	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-043	ng/L	5/10/12	< 0.803	< 0.849	< 0.814	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-044	ng/L	5/10/12	3.53	2.05	< 1.22	< 1.22	< 1.26	3.4	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-045	ng/L	5/10/12	1.11	< 0.849	< 0.814	< 0.815	< 0.839	0.892	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-046	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-047	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-048	ng/L	5/10/12	0.407	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-049	ng/L	5/10/12	2.14	1.11	< 0.814	< 0.815	< 0.839	2.23	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-050	ng/L	5/10/12	0.865	< 0.849	< 0.814	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-051	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-052	ng/L	5/10/12	3.62	1.74	< 0.407	< 0.407	0.698	2.95	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-053	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-054	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-055	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-056	ng/L	5/10/12	1.23	1.12	< 0.407	< 0.407	< 0.419	1.58	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-057	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-058	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-059	ng/L	5/10/12	< 1.2	< 1.27	< 1.22	< 1.22	< 1.26	< 1.27	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-060	ng/L	5/10/12	0.562	0.635	< 0.407	< 0.407	< 0.419	0.829	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-061	ng/L	5/10/12	2.7	2.32	< 1.63	< 1.63	< 1.68	3.59	< 1.77	< 1.65	< 1.7	< 1.72	< 1.8	< 1.61	< 1.93	< 2.00	< 2.03
PCB-062	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-063	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-064	ng/L	5/10/12	1.81	1.12	< 0.407	< 0.407	< 0.419	1.67	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506

Table 6.7
May 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754
PCB-065	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-066	ng/L	5/10/12	2.18	1.85	< 0.407	< 0.407	< 0.419	3.06	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-067	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-068	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-069	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-070	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.93	< 2.00	< 2.03
PCB-071	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-072	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-073	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-074	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.93	< 2.00	< 2.03
PCB-075	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-076	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.93	< 2.00	< 2.03
PCB-077	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-078	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-079	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-080	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-081	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
Totals for Tetrachlorobiphenyl (4CI)			23.174	14.126	0.000	0.000	0.698	23.191	0.000								
PCB-082	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-083	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-084	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-085	ng/L	5/10/12	< 1.2	< 1.27	< 1.22	< 1.22	< 1.26	< 1.27	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-086	ng/L	5/10/12	< 2.41	< 2.55	< 2.44	< 2.44	< 2.52	< 2.53	< 2.65	< 2.48	< 2.55	< 2.58	< 2.71	< 2.41	< 2.89	< 3.00	< 3.04
PCB-087	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2.89	< 3.00	< 3.04
PCB-088	ng/L	5/10/12	< 0.803	< 0.849	< 0.814	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-089	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-090	ng/L	5/10/12	< 1.2	1.29	< 1.22	< 1.22	< 1.26	< 1.27	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-091	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-092	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-093	ng/L	5/10/12	< 1.61	< 1.7	< 1.63	< 1.63	< 1.68	< 1.69	< 1.77	< 1.65	< 1.7	< 1.72	< 1.8	< 1.61	< 1.93	< 2.00	< 2.03
PCB-094	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-095	ng/L	5/10/12	0.703	0.998	1.4	< 0.407	< 0.419	0.805	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-096	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-097	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2.89	< 3.00	< 3.04

Table 6.7
May 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754
PCB-098	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.93	< 2.00	< 2.03
PCB-099	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	0.569	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-100	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.93	< 2.00	< 2.03
PCB-101	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-102	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.93	< 2.00	< 2.03
PCB-103	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-104	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-105	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	0.507	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-106	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-107	ng/L	5/10/12	< 0.803	< 0.849	< 0.814	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-108	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2.89	< 3.00	< 3.04
PCB-109	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-110	ng/L	5/10/12	< 0.803	1.16	< 0.814	< 0.815	< 0.839	1.32	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-111	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.482	< 0.500	< 0.506
PCB-112	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-113	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-114	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-115	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-116	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-117	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-118	ng/L	5/10/12	< 0.401	0.813	< 0.407	< 0.407	< 0.419	0.992	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-119	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2.89	< 3.00	< 3.04
PCB-120	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-121	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-122	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-123	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-124	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-125	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2.89	< 3.00	< 3.04
PCB-126	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-127	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
Totals for Pentachlorobiphenyl			0.703	4.261	1.400	0.000	0.000	4.193	0.000								
PCB-128	ng/L	5/10/12	< 0.803	< 0.849	< 0.814	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-129	ng/L	5/10/12	< 1.2	3.95	1.86	< 1.22	< 1.26	< 1.27	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-130	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506

OF001, OF003, OF004 sampled on 5/9/2012 OF002 sampled on 5/24/2012

Blank 32787 associated with SWBCD, SWBCU, SWBRDD, SWBRU, SWICBR, SWICDA, SWICDB, SWICU
Blank 32754 associated with OF001, OF003, OF004
Blank 32987 associated with OF002

Table 6.7
May 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754
PCB-166	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-167	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-168	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-169	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
Totals for Hexachlorobiphenyl			0.000	14.245	8.598	0.000											
PCB-170	ng/L	5/10/12	< 0.401	1.89	0.441	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-171	ng/L	5/10/12	< 0.803	< 0.849	< 0.814	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-172	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-173	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-174	ng/L	5/10/12	< 0.401	1.92	0.582	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-175	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-176	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-177	ng/L	5/10/12	< 0.401	1.06	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-178	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-179	ng/L	5/10/12	< 0.401	0.531	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-180	ng/L	5/10/12	< 0.803	4.4	1.08	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-181	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-182	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-183	ng/L	5/10/12	< 0.803	1.12	< 0.814	< 0.815	< 0.839	< 0.845	< 0.883	< 0.826	< 0.851	< 0.86	< 0.902	< 0.805	< 0.964	< 1.000	< 1.01
PCB-184	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-185	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
PCB-186	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-187	ng/L	5/10/12	< 0.401	1.87	0.608	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-188	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-189	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-190	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-191	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-192	ng/L	5/10/12	< 0.401	< 0.425	< 0.407	< 0.407	< 0.419	< 0.422	< 0.441	< 0.413	< 0.425	< 0.43	< 0.451	< 0.402	< 0.482	< 0.500	< 0.506
PCB-193	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.964	< 1.000	< 1.01
Totals for Heptachlorobiphenyl			0.000	12.791	2.711	0.000											
PCB-194	ng/L	5/10/12	< 0.602	0.881	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-195	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-196	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759

Table 6.7
May 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754
PCB-197	ng/L	5/10/12	< 1.2	< 1.27	< 1.22	< 1.22	< 1.26	< 1.27	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-198	ng/L	5/10/12	< 1.2	< 1.27	< 1.22	< 1.22	< 1.26	< 1.27	< 1.32	< 1.24	< 1.28	< 1.29	< 1.35	< 1.21	< 1.45	< 1.50	< 1.52
PCB-199	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-200	ng/L	5/10/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.45	< 1.50	< 1.52
PCB-201	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-202	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-203	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-204	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-205	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
Totals for Octachlorobiphenyl			0.000	0.881	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-206	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-207	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
PCB-208	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
Totals for Nonachlorobiphenyl			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-209	ng/L	5/10/12	< 0.602	< 0.637	< 0.611	< 0.611	< 0.629	< 0.633	< 0.662	< 0.619	< 0.638	< 0.645	< 0.676	< 0.603	< 0.723	< 0.750	< 0.759
Totals for Decachlorobiphenyl			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL PCBs ng/L			93.333	59.351	15.874	3.978	52.173	94.934	1.488	0.236	0.000						

Table 6.8
May 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754	Aroclor 1242*
PCB-001	7.757	0.000	1.852	0.000	33.542	12.746	42.675	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.540
PCB-002	0.000	0.000	0.000	8.673	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-003	1.350	0.000	1.959	9.729	1.372	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.180
total monochlorobiphenyl	9.107	0.000	3.811	18.401	34.915	13.528	42.675	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
PCB-004	15.429	2.949	0.000	0.000	36.034	22.437	57.325	100.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.080
PCB-005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.140
PCB-006	0.000	0.000	0.000	0.000	1.288	0.908	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.430
PCB-007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.260
PCB-008	2.261	0.000	0.000	0.000	3.776	3.381	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.050
PCB-009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
PCB-010	1.029	0.000	0.000	0.000	2.798	1.359	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200
PCB-011	2.764	0.000	16.127	75.415	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-012	0.000	0.000	0.000	0.000	0.000	0.709	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220
PCB-014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-015	5.968	2.039	0.000	0.000	3.201	4.772	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.100
total dichlorobiphenyl	27.450	4.987	16.127	75.415	47.097	33.565	57.325	100.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.040
PCB-016	0.758	0.674	0.000	0.000	0.521	0.505	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.140
PCB-017	1.479	0.883	0.000	0.000	1.432	1.822	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.130
PCB-018	2.164	1.837	0.000	0.000	1.430	1.243	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.530
PCB-019	8.057	1.459	0.000	0.000	5.463	4.898	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.800
PCB-020	8.196	5.055	0.000	0.000	2.108	4.561	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.720
PCB-021	0.431	0.000	0.000	0.000	0.000	0.479	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-022	2.775	1.660	0.000	0.000	0.757	1.464	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.840
PCB-023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-024	0.279	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.130
PCB-025	0.522	0.000	0.000	0.000	0.000	0.529	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.590
PCB-026	1.071	0.000	0.000	0.000	0.000	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.280
PCB-027	1.254	0.494	0.000	0.000	0.820	1.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.410
PCB-028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.860
PCB-029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080
PCB-030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.8
May 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754	Aroclor 1242*
PCB-031	4.479	1.870	0.000	6.184	1.583	2.539	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.340
PCB-032	4.982	1.954	0.000	0.000	2.128	3.086	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.900
PCB-033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.010
PCB-034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080
PCB-036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-037	1.414	1.110	0.000	0.000	0.408	1.106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.030
PCB-038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total trichlorobiphenyls	37.860	16.996	0.000	6.184	16.650	24.061	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	44.900
PCB-040	2.121	2.544	0.000	0.000	0.000	2.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.760
PCB-041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.680
PCB-042	1.114	1.131	0.000	0.000	0.000	1.127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.190
PCB-043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.180
PCB-044	3.782	3.454	0.000	0.000	0.000	3.581	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.550
PCB-045	1.189	0.000	0.000	0.000	0.000	0.940	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.890
PCB-046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.360
PCB-047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.930
PCB-048	0.436	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.180
PCB-049	2.293	1.870	0.000	0.000	0.000	2.349	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.530
PCB-050	0.927	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.230
PCB-052	3.879	2.932	0.000	0.000	1.338	3.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.530
PCB-053	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.710
PCB-054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
PCB-056	1.318	1.887	0.000	0.000	0.000	1.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.810
PCB-057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.320
PCB-060	0.602	1.070	0.000	0.000	0.000	0.873	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.180
PCB-061	2.893	3.909	0.000	0.000	0.000	3.782	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-062	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.8
May 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754	Aroclor 1242*
PCB-063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120
PCB-064	1.939	1.887	0.000	0.000	0.000	1.759	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.700
PCB-065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-066	2.336	3.117	0.000	0.000	0.000	3.223	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.390
PCB-067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.160
PCB-068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-069	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.730
PCB-071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.030
PCB-072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-073	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
PCB-074	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.810
PCB-075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080
PCB-077	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.310
PCB-079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-081	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total tetrachlorobiphenyls	24.829	23.801	0.000	0.000	1.338	24.429	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	32.540
PCB-082	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.260
PCB-084	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110
PCB-085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.410
PCB-086	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.310
PCB-087	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.460
PCB-088	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-090	0.000	2.174	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090
PCB-091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.210
PCB-092	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090
PCB-094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-095	0.753	1.682	8.819	0.000	0.000	0.848	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010

Legend:

PCB Congener Weight Percent				
0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20

Table 6.8
May 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754	Aroclor 1242*
PCB-096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.610
PCB-097	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.380
PCB-098	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-099	0.000	0.000	0.000	0.000	0.000	0.599	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-101	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.690
PCB-102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.070
PCB-103	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.460
PCB-104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-105	0.000	0.000	0.000	0.000	0.000	0.534	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.470
PCB-107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-110	0.000	1.954	0.000	0.000	0.000	1.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.830
PCB-113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-114	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-115	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-118	0.000	1.370	0.000	0.000	0.000	1.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-119	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.660
PCB-121	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-123	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-124	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total pentachlorobiphenyls	0.753	7.179	8.819	0.000	0.000	4.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.450

Legend:

PCB Congener Weight Percent				
0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20

Table 6.8
May 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754	Aroclor 1242*
PCB-128	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-129	0.000	6.655	11.717	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-132	0.000	1.735	4.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-134	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
PCB-136	0.000	0.000	2.665	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-141	0.000	1.887	3.345	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
PCB-142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-143	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-144	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-146	0.000	0.885	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-147	0.000	4.802	13.796	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-148	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-149	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-151	0.000	2.140	6.993	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-152	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-153	0.000	5.897	11.591	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-154	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-155	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-158	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-161	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-162	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-163	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.8
May 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754	Aroclor 1242*
PCB-164	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-165	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-166	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-168	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-169	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total hexachlorobiphenyls	0.000	24.001	54.164	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.330
PCB-170	0.000	3.184	2.778	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-172	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-174	0.000	3.235	3.666	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-175	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-176	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-177	0.000	1.786	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-178	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-179	0.000	0.895	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-180	0.000	7.414	6.804	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-181	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-182	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-183	0.000	1.887	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-184	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-185	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-186	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-187	0.000	3.151	3.830	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-188	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-189	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-190	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-191	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-192	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-193	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total heptachlorobiphenyls	0.000	21.551	17.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.8
May 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 32987	Blank 32787	Blank 32754	Aroclor 1242*
PCB-194	0.000	1.484	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-195	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-196	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-197	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-198	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-199	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-201	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-202	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-203	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-204	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-205	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total octachlorobiphenyls	0.000	1.484	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-206	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-207	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-208	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total nonachlorobiphenyls	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-209	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total decachlorobiphenyls	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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*2000 ATSDR Toxicological Profile for Polychlorinated Biphenyls, Table 4-4.

6.12.2 October 2012 1668 Sampling

Reference Figure 6.7 to locate the sample locations discussed in this section. Results from this round of sampling were consistent with the historic 1668 data set. Three out of the four KCP outfalls detected PCBs at levels within the historic range of results. Historically, Outfall 004 has not detected PCBs. Table 6.6 provides total PCB concentrations derived from Method 1668 analysis from the four outfalls and six surface water sample stations near the KCP. Outfall 001 detected 20.43 ng/L total PCBs, Outfall 002 detected 534.29 ng/L total PCBs, and Outfall 003 detected 16.86 ng/L total PCBs. These results are within the historic range of results.

All three of the sample stations on the Blue River detected PCBs. Both sample stations on Boone Creek detected PCBs. All three Indian Creek sample stations detected PCBs, however, the levels detected were less than or very near PCB levels detected in the associated method blank. Therefore, Indian Creek surface water samples must be considered non-detect for PCBs. Although none of the three Indian Creek sample stations detected PCBs fish tissue samples collected during numerous previous rounds of bioaccumulation sampling demonstrate the presence of PCBs within the Indian Creek watershed both upstream and downstream of KCP stormwater discharges.

The upstream Blue River sample station (BRU) and the downstream Blue River sample station (BRD) detected PCBs. Sample station BRU detected 0.982 ng/L total PCBs which is within the range of historic results. However, the associated method blank detected 0.743 ng/L total PCBs. The BRU sample station detects PCBs approximately 50% of the time when sampled by Method 1668. Biota samples (fish tissue and clams) collected at the BRU sample station consistently detect PCBs. These data (water and biota samples) demonstrate the Blue River upstream of the KCP is impacted by sources of PCBs not related to the KCP.

The BRD sample station downstream of all KCP discharges detected 4.05ng/L of PCBs. The BRD sample station is impacted by PCBs contributed by a source located within the watershed of Boone Creek. Boone Creek runs along the northeast edge of the Bannister Federal Complex before discharging into the Blue River immediately south of the

Prospect bridge. KCP Outfall 001 discharges into Boone Creek. Sample station BCU is located upstream of Outfall 001. The BCU sample station detected 22.58 ng/L of total PCBs. The Boone Creek sample station located downstream of the Outfall 001 discharge detected 19.44 ng/L of total PCBs. Based on the historic data set for Boone Creek, it is apparent that a PCB source upstream of the KCP on Boone Creek adds to the PCB levels detected at the BRD sample station.

Table 6.9 provides Method 1668 sample results for the four regulated outfalls and six surface water sample stations by concentration and Table 6.10 provides the weight percent congener composition present in the sample. In order to compare the makeup of congeners present in the sample to the distribution of congeners in pure Aroclor 1242 the weight percent congener composition for Aroclor 1242 is also provided in Table 6.10. Samples from Outfall 001 and 002 typically note a higher relative weight percent of the di, tri and tetrachlorobiphenyl homolog groups which is consistent with the homolog distribution of an Aroclor 1242 pattern. Outfall 003 notes a higher relative weight percent distribution of the penta and hexachlorobiphenyl homolog groups which is likely associated with the historic Aroclor 1260 PCB source. However, during the October sample event Outfall 002 noted a higher relative weight percent distribution of the hexa and heptachlorobiphenyl homolog groups, which is indicative of an Aroclor 1260 source. Approximately 337 ng/L of the 534 ng/L total PCBs detected at Outfall 002 were composed of the hexa and hepta homolog groups. Outfalls 001, 002 and 003 detected PCBs within or below the historic range (Table 6.6).

Table 6.9
October 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665
PCB-001	ng/L	10/24/12	3.59	1.17	0.64	0.401	3.86	3.63	1.23	0.437	0.314	0.516	0.417	0.583	0.32	0.387
PCB-002	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-003	ng/L	10/24/12	0.738	0.826	0.282	0.282	0.361	0.454	0.43	0.251	< 0.25	0.36	0.271	0.4	< 0.25	0.356
Totals for Monochlorobiphenyl			4.328	2.00	0.922	0.683	4.221	4.084	1.660	0.688	0.314	0.876	0.688	0.983	0.321	0.743
PCB-004	ng/L	10/24/12	6.44	2.94	1.49	< 0.217	7.660	11.2	1.4	0.294	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-005	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-006	ng/L	10/24/12	0.254	0.444	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-007	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-008	ng/L	10/24/12	0.846	0.964	0.491	< 0.217	0.524	0.567	0.317	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-009	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-010	ng/L	10/24/12	0.44	0.33	< 0.217	< 0.217	0.515	0.805	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-011	ng/L	10/24/12	< 1.28	< 1.33	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-012	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-013	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.5	< 0.486
PCB-014	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-015	ng/L	10/24/12	1.82	2.39	0.405	< 0.217	0.898	1.05	0.411	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
Totals for Dichlorobiphenyl			9.800	7.068	2.386	0.000	9.597	13.622	2.128	0.294	0.000	0.000	0.000	0.000	0.000	0.000
PCB-016	ng/L	10/24/12	< 0.214	0.956	< 0.217	< 0.217	< 0.217	0.211	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-017	ng/L	10/24/12	0.584	1.28	0.304	< 0.217	0.399	0.586	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-018	ng/L	10/24/12	0.503	2.32	< 0.434	< 0.434	0.468	0.594	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-019	ng/L	10/24/12	1.33	2.28	0.293	< 0.217	0.828	1.15	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-020	ng/L	10/24/12	0.821	11.1	< 0.434	< 0.434	0.989	0.592	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-021	ng/L	10/24/12	< 0.428	0.916	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-022	ng/L	10/24/12	0.307	4.34	< 0.217	< 0.217	0.317	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-023	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-024	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-025	ng/L	10/24/12	< 0.214	0.645	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-026	ng/L	10/24/12	< 0.428	0.793	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-027	ng/L	10/24/12	0.275	0.816	< 0.217	< 0.217	< 0.217	0.222	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-028	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.5	< 0.486
PCB-029	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.5	< 0.486
PCB-030	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.5	< 0.486
PCB-031	ng/L	10/24/12	0.63	2.95	0.228	< 0.217	0.596	0.486	0.27	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243

Table 6.9
October 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665
PCB-032	ng/L	10/24/12	0.866	3.37	< 0.217	< 0.217	0.552	0.547	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-033	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.5	< 0.486
PCB-034	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-035	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-036	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-037	ng/L	10/24/12	0.241	2.73	< 0.217	< 0.217	0.243	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-038	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
PCB-039	ng/L	10/24/12	< 0.214	< 0.221	< 0.217	< 0.217	< 0.217	< 0.199	< 0.25	< 0.25	< 0.25	< 0.21	< 0.201	< 0.2	< 0.25	< 0.243
Totals for Trichlorobiphenyl			5.557	34.50	0.825	0.000	4.392	4.388	0.270	0.000						
PCB-040	ng/L	10/24/12	< 1.28	6	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-041	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-042	ng/L	10/24/12	< 0.428	3.02	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-043	ng/L	10/24/12	< 0.856	< 0.885	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-044	ng/L	10/24/12	< 1.28	8.5	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-045	ng/L	10/24/12	< 0.856	2.01	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-046	ng/L	10/24/12	< 0.428	0.795	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-047	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-048	ng/L	10/24/12	< 0.428	1.47	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-049	ng/L	10/24/12	< 0.856	5.01	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-050	ng/L	10/24/12	< 0.856	1.38	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-051	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-052	ng/L	10/24/12	0.75	6.94	< 0.434	< 0.434	0.758	0.487	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-053	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-054	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-055	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-056	ng/L	10/24/12	< 0.428	5.4	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-057	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-058	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-059	ng/L	10/24/12	< 1.28	< 1.33	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-060	ng/L	10/24/12	< 0.428	3.06	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-061	ng/L	10/24/12	< 1.71	10.2	< 1.73	< 1.73	< 1.73	< 1.6	< 2	< 2	< 2	< 1.68	< 1.61	< 1.6	< 2	< 1.94
PCB-062	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-063	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-064	ng/L	10/24/12	< 0.428	4.61	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486

Table 6.9
October 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665
PCB-065	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-066	ng/L	10/24/12	< 0.428	8.78	< 0.434	< 0.434	0.473	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-067	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-068	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-069	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-070	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2	< 1.94
PCB-071	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-072	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-073	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-074	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2	< 1.94
PCB-075	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-076	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2	< 1.94
PCB-077	ng/L	10/24/12	< 0.428	1.09	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-078	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-079	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-080	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-081	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
Totals for Tetrachlorobiphenyl (4CI)			0.750	68.265	0.000	0.000	1.231	0.487	0.000							
PCB-082	ng/L	10/24/12	< 0.428	0.733	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-083	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-084	ng/L	10/24/12	< 0.428	1.29	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-085	ng/L	10/24/12	< 1.28	< 1.33	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-086	ng/L	10/24/12	< 2.57	3.83	< 2.6	< 2.6	< 2.6	< 2.39	< 3	< 3	< 3	< 2.52	< 2.42	< 2.4	< 3	< 2.91
PCB-087	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 3	< 2.91
PCB-088	ng/L	10/24/12	< 0.856	< 0.885	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-089	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-090	ng/L	10/24/12	< 1.28	11.6	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-091	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-092	ng/L	10/24/12	< 0.428	1.27	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-093	ng/L	10/24/12	< 1.71	< 1.77	< 1.73	< 1.73	< 1.73	< 1.6	< 2	< 2	< 2	< 1.68	< 1.61	< 1.6	< 2	< 1.94
PCB-094	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-095	ng/L	10/24/12	< 0.428	7.36	0.664	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-096	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-097	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 3	< 2.91

Table 6.9
October 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665
PCB-098	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2	< 1.94
PCB-099	ng/L	10/24/12	< 0.428	1.53	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-100	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2	< 1.94
PCB-101	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-102	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 2	< 1.94
PCB-103	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-104	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-105	ng/L	10/24/12	< 0.428	1.92	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-106	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-107	ng/L	10/24/12	< 0.856	< 0.885	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-108	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 3	< 2.91
PCB-109	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-110	ng/L	10/24/12	< 0.856	8.04	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-111	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 0.5	< 0.486
PCB-112	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-113	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-114	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-115	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-116	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-117	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-118	ng/L	10/24/12	< 0.428	5.71	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-119	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 3	< 2.91
PCB-120	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-121	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-122	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-123	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-124	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-125	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 3	< 2.91
PCB-126	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-127	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
Totals for Pentachlorobiphenyl			0.000	43.283	0.664	0.000										
PCB-128	ng/L	10/24/12	< 0.856	2.57	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-129	ng/L	10/24/12	< 1.28	41.8	1.93	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-130	ng/L	10/24/12	< 0.428	1.16	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486

Table 6.9
October 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665
PCB-131	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-132	ng/L	10/24/12	< 0.428	9.77	0.593	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-133	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-134	ng/L	10/24/12	< 0.856	1.23	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-135	ng/L	10/24/12	< 0.856	13.2	0.981	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-136	ng/L	10/24/12	< 0.428	4.12	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-137	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-138	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-139	ng/L	10/24/12	< 0.856	< 0.885	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-140	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-141	ng/L	10/24/12	< 0.428	11.2	0.507	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-142	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-143	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-144	ng/L	10/24/12	< 0.428	2.06	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-145	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-146	ng/L	10/24/12	< 0.428	4.74	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-147	ng/L	10/24/12	< 0.856	28.6	2.01	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-148	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-149	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-150	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-151	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	< 0.401	< 1	< 0.971
PCB-152	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-153	ng/L	10/24/12	< 0.856	37.3	1.99	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-154	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-155	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-156	ng/L	10/24/12	< 0.856	3.55	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-157	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-158	ng/L	10/24/12	< 0.428	3.77	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-159	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-160	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-161	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-162	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-163	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-164	ng/L	10/24/12	< 0.428	2.88	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-165	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486

Table 6.9
October 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665
PCB-166	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-167	ng/L	10/24/12	< 0.428	1.28	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-168	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-169	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
Totals for Hexachlorobiphenyl			0.000	169.230	8.011	0.000										
PCB-170	ng/L	10/24/12	< 0.428	23.2	0.6	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-171	ng/L	10/24/12	< 0.856	6.12	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-172	ng/L	10/24/12	< 0.428	3.55	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-173	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-174	ng/L	10/24/12	< 0.428	20.8	0.745	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-175	ng/L	10/24/12	< 0.428	0.75	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-176	ng/L	10/24/12	< 0.428	2.05	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-177	ng/L	10/24/12	< 0.428	11.6	0.437	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-178	ng/L	10/24/12	< 0.428	3.31	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-179	ng/L	10/24/12	< 0.428	5.87	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-180	ng/L	10/24/12	< 0.856	50.5	1.43	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-181	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-182	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-183	ng/L	10/24/12	< 0.856	13.1	< 0.867	< 0.867	< 0.867	< 0.798	< 1	< 1	< 1	< 0.839	< 0.805	< 0.801	< 1	< 0.971
PCB-184	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-185	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
PCB-186	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-187	ng/L	10/24/12	< 0.428	21	0.84	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-188	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-189	ng/L	10/24/12	< 0.428	0.991	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-190	ng/L	10/24/12	< 0.428	5.11	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-191	ng/L	10/24/12	< 0.428	0.919	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-192	ng/L	10/24/12	< 0.428	< 0.443	< 0.434	< 0.434	< 0.433	< 0.399	< 0.5	< 0.5	< 0.5	< 0.42	< 0.403	< 0.401	< 0.5	< 0.486
PCB-193	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1	< 0.971
Totals for Heptachlorobiphenyl			0.000	168.870	4.052	0.000										
PCB-194	ng/L	10/24/12	< 0.642	10	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-195	ng/L	10/24/12	< 0.642	4.32	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-196	ng/L	10/24/12	< 0.642	5.17	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728

Table 6.9
October 2012 Method 1668 Surface Water Sampling Results
(results in ng/L)

Parameter	Unit	Date	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665
PCB-197	ng/L	10/24/12	< 1.28	1.38	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-198	ng/L	10/24/12	< 1.28	9.59	< 1.3	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.5	< 1.26	< 1.21	< 1.2	< 1.5	< 1.46
PCB-199	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-200	ng/L	10/24/12	0	0	0	0	0	0	0	0	0	0	0	0	< 1.5	< 1.46
PCB-201	ng/L	10/24/12	< 0.642	0.927	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-202	ng/L	10/24/12	< 0.642	1.2	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-203	ng/L	10/24/12	< 0.642	5.92	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-204	ng/L	10/24/12	< 0.642	< 0.664	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-205	ng/L	10/24/12	< 0.642	0.741	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
Totals for Octachlorobiphenyl			0.000	39.248	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-206	ng/L	10/24/12	< 0.642	1.84	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-207	ng/L	10/24/12	< 0.642	< 0.664	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
PCB-208	ng/L	10/24/12	< 0.642	< 0.664	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
Totals for Nonachlorobiphenyl			0.000	1.840	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-209	ng/L	10/24/12	< 0.642	< 0.664	< 0.65	< 0.65	< 0.65	< 0.598	< 0.75	< 0.75	< 0.75	< 0.629	< 0.604	< 0.601	< 0.75	< 0.728
Totals for Decachlorobiphenyl			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL PCBs ng/L			20.435	534.296	16.860	0.683	19.441	22.581	4.058	0.982	0.314	0.876	0.688	0.983	0.321	0.743

Table 6.10
October 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665	Aroclor 1242*
PCB-001	17.568	0.219	3.796	58.712	19.855	16.075	30.310	44.501	100.000	58.904	60.610	59.308	100.000	52.086	0.540
PCB-002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-003	3.611	0.155	1.673	41.288	1.857	2.011	10.596	25.560	0.000	41.096	39.390	40.692	0.000	47.914	0.180
total monochlorobiphenyl	21.179	0.374	5.469	100.000	21.712	18.086	40.907	70.061	100.000	100.000	100.000	100.000	100.000	100.000	0.750
PCB-004	31.515	0.550	8.837	0.000	39.401	49.599	34.500	29.939	0.000	0.000	0.000	0.000	0.000	0.000	3.080
PCB-005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.140
PCB-006	1.243	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.430
PCB-007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.260
PCB-008	4.140	0.180	2.912	0.000	2.695	2.511	7.812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.050
PCB-009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
PCB-010	2.153	0.062	0.000	0.000	2.649	3.565	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200
PCB-011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220
PCB-014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-015	8.906	0.447	2.402	0.000	4.619	4.650	10.128	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.100
total dichlorobiphenyl	47.957	1.323	14.152	0.000	49.365	60.325	52.440	29.939	0.000	0.000	0.000	0.000	0.000	0.000	15.040
PCB-016	0.000	0.179	0.000	0.000	0.000	0.934	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.140
PCB-017	2.858	0.240	1.803	0.000	2.052	2.595	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.130
PCB-018	2.461	0.434	0.000	0.000	2.407	2.631	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	8.530
PCB-019	6.508	0.427	1.738	0.000	4.259	5.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.800
PCB-020	4.018	2.078	0.000	0.000	5.087	2.622	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.720
PCB-021	0.000	0.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-022	1.502	0.812	0.000	0.000	1.631	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.840
PCB-023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.130
PCB-025	0.000	0.121	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.590
PCB-026	0.000	0.148	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.280
PCB-027	1.346	0.153	0.000	0.000	0.000	0.983	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.410
PCB-028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.860
PCB-029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080
PCB-030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.10
October 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665	Aroclor 1242*
PCB-031	3.083	0.552	1.352	0.000	3.066	2.152	6.654	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.340
PCB-032	4.238	0.631	0.000	0.000	2.839	2.422	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.900
PCB-033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.010
PCB-034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080
PCB-036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-037	1.179	0.511	0.000	0.000	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.030
PCB-038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total trichlorobiphenyls	27.194	6.456	4.893	0.000	22.591	19.432	6.654	0.000	0.000	0.000	0.000	0.000	0.000	0.000	44.900
PCB-040	0.000	1.123	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.760
PCB-041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.680
PCB-042	0.000	0.565	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.190
PCB-043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.180
PCB-044	0.000	1.591	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.550
PCB-045	0.000	0.376	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.890
PCB-046	0.000	0.149	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.360
PCB-047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.930
PCB-048	0.000	0.275	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.180
PCB-049	0.000	0.938	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.530
PCB-050	0.000	0.258	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.230
PCB-052	3.670	1.299	0.000	0.000	3.899	2.157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.530
PCB-053	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.710
PCB-054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
PCB-056	0.000	1.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.810
PCB-057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.320
PCB-060	0.000	0.573	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.180
PCB-061	0.000	1.909	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-062	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.10
October 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665	Aroclor 1242*
PCB-063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120
PCB-064	0.000	0.863	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.700
PCB-065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-066	0.000	1.643	0.000	0.000	2.433	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.390
PCB-067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.160
PCB-068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-069	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.730
PCB-071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.030
PCB-072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-073	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
PCB-074	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.810
PCB-075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080
PCB-077	0.000	0.204	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.310
PCB-079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-081	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total tetrachlorobiphenyls	3.670	12.777	0.000	0.000	6.332	2.157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	32.540
PCB-082	0.000	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.260
PCB-084	0.000	0.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110
PCB-085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.410
PCB-086	0.000	0.717	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.310
PCB-087	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.460
PCB-088	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-090	0.000	2.171	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090
PCB-091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.210
PCB-092	0.000	0.238	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090
PCB-094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-095	0.000	1.378	3.938	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.10
October 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665	Aroclor 1242*
PCB-096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.610
PCB-097	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.380
PCB-098	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-099	0.000	0.286	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-101	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.690
PCB-102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.070
PCB-103	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.460
PCB-104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-105	0.000	0.359	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-106	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.470
PCB-107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-110	0.000	1.505	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.830
PCB-113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-114	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-115	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-118	0.000	1.069	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-119	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.660
PCB-121	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-123	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-124	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
PCB-127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total pentachlorobiphenyls	0.000	8.101	3.938	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.450

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.10
October 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665	Aroclor 1242*
PCB-128	0.000	0.481	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-129	0.000	7.823	11.447	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
PCB-130	0.000	0.217	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-131	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-132	0.000	1.829	3.517	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040
PCB-134	0.000	0.230	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-135	0.000	2.471	5.819	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
PCB-136	0.000	0.771	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-141	0.000	2.096	3.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
PCB-142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-143	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-144	0.000	0.386	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-146	0.000	0.887	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-147	0.000	5.353	11.922	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-148	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-149	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-151	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-152	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-153	0.000	6.981	11.803	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-154	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060
PCB-155	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-156	0.000	0.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-158	0.000	0.706	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-161	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-162	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
PCB-163	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.10
October 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665	Aroclor 1242*
PCB-164	0.000	0.539	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-165	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-166	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-167	0.000	0.240	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-168	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-169	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total hexachlorobiphenyls	0.000	31.673	47.515	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.330
PCB-170	0.000	4.342	3.559	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-171	0.000	1.145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-172	0.000	0.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-174	0.000	3.893	4.419	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-175	0.000	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-176	0.000	0.384	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-177	0.000	2.171	2.592	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-178	0.000	0.620	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-179	0.000	1.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-180	0.000	9.452	8.482	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-181	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-182	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-183	0.000	2.452	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-184	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-185	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-186	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-187	0.000	3.930	4.982	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-188	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-189	0.000	0.185	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-190	0.000	0.956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-191	0.000	0.172	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-192	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-193	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total heptachlorobiphenyls	0.000	31.606	24.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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Table 6.10
October 2012 Method 1668 Surface Water Sampling Results
Weight Percent Congener Composition

Parameter	OF001	OF002	OF003	OF004	SWBCD	SWBCU	SWBRDD	SWBRU	SWICBR	SWICDA	SWICDB	SWICU	Blank 34471	Blank 34665	Aroclor 1242*
PCB-194	0.000	1.872	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-195	0.000	0.809	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-196	0.000	0.968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-197	0.000	0.258	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-198	0.000	1.795	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-199	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-201	0.000	0.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-202	0.000	0.225	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-203	0.000	1.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-204	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-205	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total octachlorobiphenyls	0.000	7.346	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-206	0.000	0.344	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-207	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-208	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total nonachlorobiphenyls	0.000	0.344	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PCB-209	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
total decachlorobiphenyls	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Legend:

PCB Congener Weight Percent

0	PCBs 0.001 - <1	PCBs 1 - <5	PCBs 5 - <20	PCBs >20
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*2000 ATSDR Toxicological Profile for Polychlorinated Biphenyls, Table 4-4.

6.13 Method 1668a Conclusions

(reference Table 6.6) With the exception of 534 ng/L total PCBs detected during October 2012 in the Outfall 002 sample, all results were within the historic 10 year range. PCBs are present in KCP Outfalls 001, 002, and 003, however, concentrations are below the NPDES permit limit of 0.5 µg/L. The surface water sample station downstream of Outfall 002 (ICDB) occasionally detects PCBs. The surface water sample station downstream of all KCP discharges on the Blue River (BRD) routinely detects PCBs. PCB concentrations seen at the BRD sample station are influenced by discharges from the KCP and the source of PCBs noted on Boone Creek upstream of KCP stormwater discharges. Based on 1668 analysis PCBs are present upstream of the KCP on Boone Creek and the Blue River. While PCBs are typically not detected at the upstream Indian Creek sample station (ICU) other available data (i.e., bioaccumulation studies and analysis utilizing semi-permeable membrane devices (SPMDs)) notes the presence of PCBs at the ICU sample station.

Method 1668 analysis is one of several tools used to characterize the occurrence of PCBs in KCP stormwater discharges and associated impact to the receiving streams. The KCP has also utilized semi-permeable membrane devices (SPMDs) and fish tissue sampling to characterize spatial / temporal patterns of PCBs in receiving streams and biota from streams near the KCP (DOE 2008a). Through a comprehensive review of all data sources the following conclusions can be reached:

- PCB concentrations in Indian Creek and Blue River fish are relatively low, and similar to many national urban sites.
- The spatial pattern of PCB contamination in fish, coupled with statistical analyses of the congener pattern in fish, continues to indicate that the KCP vicinity contributes to the PCB body burdens of fish in the receiving streams.
- The presence of PCBs in fish near the KCP is at least partially due to other sources of PCBs to the watershed, as evidenced by detectable levels of PCBs in biota upstream of the plant (DOE 2008a).

6.13.1 Indian Creek Sediment Sampling

As a result of MDNR comments associated with the 95th Terrace RCRA Facility Investigation (RFI) Report, sediment samples for PCB analyses are collected from Indian Creek adjacent to the KCP's stormwater Outfall 002 on a quarterly basis. Appendix F of the Sampling and Analysis Plan was modified to incorporate the above sampling which composites three samples of Indian Creek bed sediments near Outfall 002. Sediment samples are collected from three locations in Indian Creek near Outfall 002 and composited into one sample. Sample location #1 is 10 - 12 feet upstream of the outfall to account for the influence of an eddy, sample location #2 is approximately 10 feet across from the discharge, and sample location #3 is approximately 30 feet downstream of the discharge. The reference site is located a significant distance upstream of the KCP and is used to characterize any upstream PCB influences. Samples results are provided in Table 6.11.

Table 6.11
Indian Creek Sediment Sample Results Near outfall 002
(total PCB results in mg/kg)

Date / location	Indian Creek #1	Indian Creek #2	Indian Creek #3	Average Indian Creek PCB sediment concentration	Upstream reference (Holmes Bridge)
1/9/12	<0.032	2.8	0.176	0.992	<0.0328
4/10/12	<0.033	<0.032	0.0989	0.033	<0.0321
7/10/12	<0.032	<0.032	0.057	0.019	<0.0324
11/21/12	<0.033	0.119	0.284	0.134	<0.0327

The 95th Terrace Corrective Measures Study (CMS) evaluated remediation alternatives for the 95th Terrace site, which included alternatives to address PCB contaminated sediments in Indian Creek. MDNR approved the CMS October 5, 2005. The 95th Terrace CMS requires calculation of a Hazard Index (HI) for the recreational receptor pathway for sediments near Outfall 002. If the HI were to exceed a value of one for four consecutive sampling events (performed quarterly) this would trigger an investigation and evaluation of potential causes for upward trends of PCBs in Indian Creek sediments and the possible need to implement other corrective measure alternatives for contaminated sediment in Indian Creek. The HI calculation is based on the average

concentration of PCBs collected from the three sample locations near Outfall 002. A HI equal to or less than one indicates that no adverse noncarcinogenic health effects are expected to occur even to sensitive individuals over a lifetime of exposure. The HI (Hazard Quotient) determinations for both the child and adult recreational receptors are provided in Table 6.12. The HI calculations associated with each of the five sediment sampling events (Table 5.10) are provided as attachments at the end of this section. The cumulative HI did not approach 1.0 for either receptor.

Table 6.12.
Child and Adult Recreational Receptor Dermal / Ingestion
Exposure Pathway HI Summaries for PCBs in Steambed Sediments

	Intake Pathway	Child Hazard Quotient (HI)		Adult Hazard Quotient (HI)	
		Average	RME	Average	RME
January 2012 Sediment Data	dermal	0.004	0.170	0.000	0.11
	ingestion	0.004	0.031	0.0012	0.010
	Cumulative HI	0.007	0.201	0.0012	0.12

April 2012 Sediment Data	dermal	0.000	0.006	0.00	0.00
	ingestion	0.000	0.001	0.00	0.00
	Cumulative HI	0.000	0.007	0.00	0.00

July 2012 Sediment Data	dermal	0.000	0.003	0.00	0.00
	ingestion	0.000	0.001	0.00	0.00
	Cumulative HI	0.000	0.004	0.00	0.00

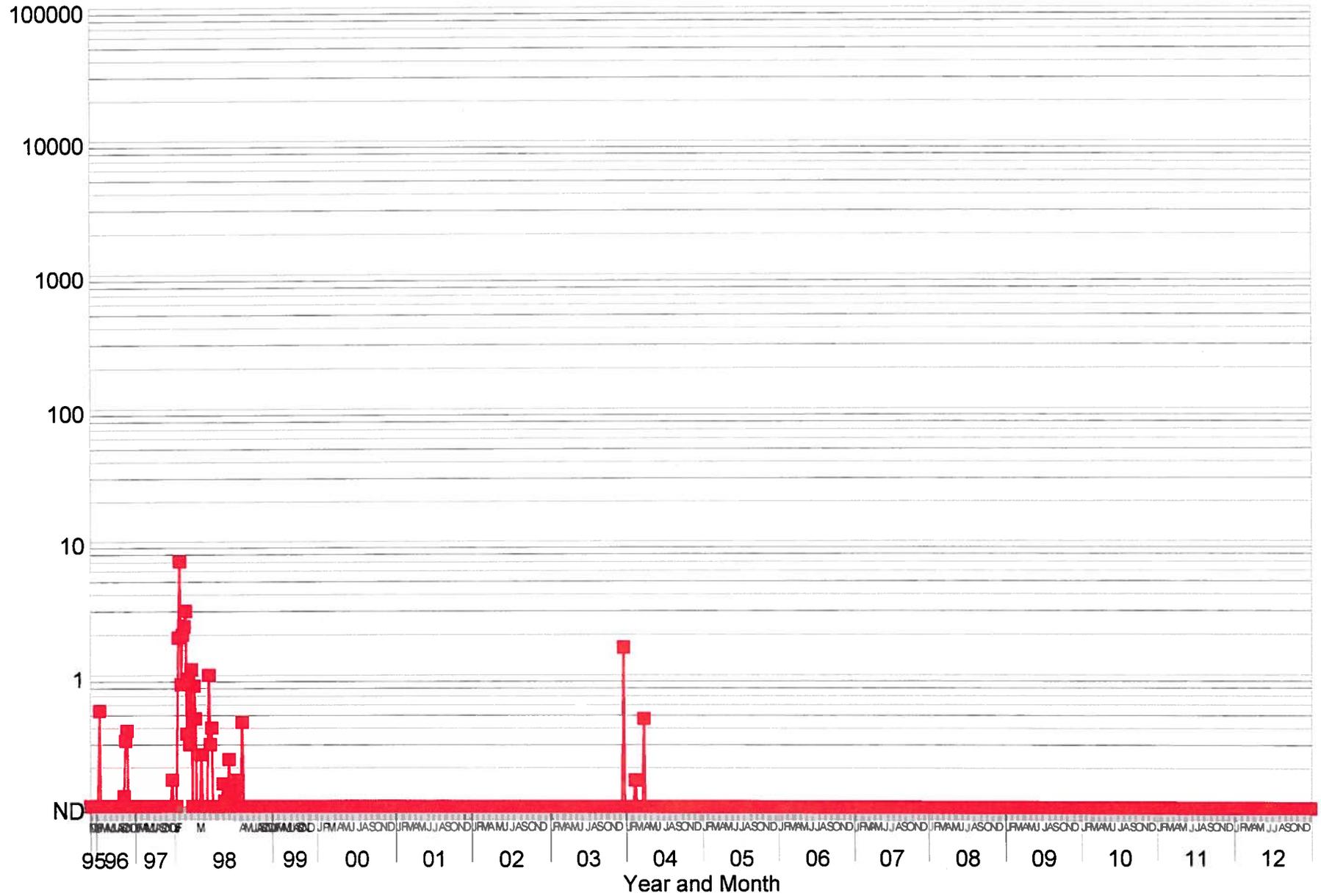
November 2012 Sediment Data	dermal	0.001	0.023	0.00	0.01
	ingestion	0.001	0.004	0.00	0.00
	Cumulative HI	0.002	0.027	0.00	0.01

RME – Reasonable Maximum Exposure level

Section 5.0 Attachments

OF001

Concentrations, ug/L



COMPOUNDS: ■ PCBs, Total

ADULT RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

January 2012 data

	Sediment Concentration		Noncarcinogenic IF		Carcinogenic IF		Chronic	Slope Factor	Hazard Quotient		Cancer Risk	
	RME	(mg/kg)	Average	RME	Average	RME	RfD		Average	RME	Average	RME
			(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	mg/kg - day	(mg/kg-d) ⁻¹				
PCBs												
1242	0.00E+00		5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		0.00E+00	0.00E+00		
1248	9.92E-01		5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		2.79E-03	1.07E-01		
Total PCBs	9.92E-01		5.63E-08	2.16E-06	6.75E-09	8.64E-07		2.00E+00			1.34E-08	1.71E-06
								TOTALS	0.00	0.11	1E-08	2E-06

ADULT RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

January 2012 Data

	Sediment Concentration		Noncarcinogenic IF		Carcinogenic IF		Chronic	Slope Factor	Hazard Quotient		Cancer Risk	
	RME	(mg/kg)	Average	RME	Average	RME	RfD		Average	RME	Average	RME
			(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	mg/kg - day	(mg/kg-d) ⁻¹				
PCBs												
1242	0.00E+00		2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		0.00E+00	0.00E+00		
1248	9.92E-01		2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		1.23E-03	9.82E-03		
Total PCBs	9.92E-01		2.48E-08	1.98E-07	2.98E-09	7.94E-08		2.00E+00			5.91E-09	1.58E-07
								TOTALS	0.0012	0.01	6E-09	2E-07

ADULT RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

April 2012 data

	Sediment Concentration		Noncarcinogenic IF		Carcinogenic IF		Chronic	Slope Factor	Hazard Quotient		Cancer Risk	
	RME	(mg/kg)	Average	RME	Average	RME	RfD		Average	RME	Average	RME
			(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	mg/kg - day	(mg/kg-d) ⁻¹				
PCBs												
1242		3.30E-02	5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		9.28E-05	3.56E-03		
1248		0.00E+00	5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		0.00E+00	0.00E+00		
Total PCBs		3.30E-02	5.63E-08	2.16E-06	6.75E-09	8.64E-07		2.00E+00			4.45E-10	5.70E-08
								TOTALS	0.00	0.00	4E-10	6E-08

ADULT RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

April 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	3.30E-02	2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		4.09E-05	3.26E-04		
1248	0.00E+00	2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		0.00E+00	0.00E+00		
Total PCBs	3.30E-02	2.48E-08	1.98E-07	2.98E-09	7.94E-08		2.00E+00			1.96E-10	5.24E-09
							TOTALS	0.00	0.00	2E-10	5E-09

ADULT RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

July 2012 data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		0.00E+00	0.00E+00		
1248	1.90E-02	5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		5.35E-05	2.05E-03		
Total PCBs	1.90E-02	5.63E-08	2.16E-06	6.75E-09	8.64E-07		2.00E+00			2.57E-10	3.28E-08
							TOTALS	0.00	0.00	3E-10	3E-08

ADULT RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

July 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		0.00E+00	0.00E+00		
1248	1.90E-02	2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		2.36E-05	1.88E-04		
Total PCBs	1.90E-02	2.48E-08	1.98E-07	2.98E-09	7.94E-08		2.00E+00			1.13E-10	3.02E-09
							TOTALS	0.00	0.00	1E-10	3E-09

ADULT RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

Nov 2012 data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		0.00E+00	0.00E+00		
1248	1.34E-01	5.63E-08	2.16E-06	6.75E-09	8.64E-07	2.00E-05		3.78E-04	1.45E-02		
Total PCBs	1.34E-01	5.63E-08	2.16E-06	6.75E-09	8.64E-07		2.00E+00			1.81E-09	2.32E-07
							TOTALS	0.00	0.01	2E-09	2E-07

ADULT RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

Nov 2012 Data

	Sediment Concentration		Noncarcinogenic IF		Carcinogenic IF		Chronic	Slope Factor	Hazard Quotient		Cancer Risk	
	RME	(mg/kg)	Average	RME	Average	RME	RfD		Average	RME	Average	RME
			(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	mg/kg - day	(mg/kg-d) ⁻¹				
PCBs												
1242	0.00E+00		2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		0.00E+00	0.00E+00		
1248	1.34E-01		2.48E-08	1.98E-07	2.98E-09	7.94E-08	2.00E-05		1.67E-04	1.33E-03		
Total PCBs	1.34E-01		2.48E-08	1.98E-07	2.98E-09	7.94E-08		2.00E+00			8.01E-10	2.13E-08
								TOTALS	0.00	0.00	8E-10	2E-08

CHILD RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

January 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		0.00E+00	0.00E+00		
1248	9.92E-01	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		4.42E-03	1.70E-01		
Total PCBs	9.92E-01	8.92E-08	3.43E-06	1.07E-08	4.11E-07		2.00E+00			2.12E-08	8.15E-07
							TOTALS	0.004	0.170	2E-08	8E-07

CHILD RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

January 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		0.00E+00	0.00E+00		
1248	9.92E-01	7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		3.90E-03	3.12E-02		
Total PCBs	9.92E-01	7.86E-08	3.43E-06	9.43E-09	7.55E-08		2.00E+00			1.87E-08	1.50E-07
							TOTALS	0.004	0.031	2E-08	1E-07

CHILD RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

April 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	3.30E-02	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		1.47E-04	5.65E-03		
1248	0.00E+00	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		0.00E+00	0.00E+00		
Total PCBs	3.30E-02	8.92E-08	3.43E-06	1.07E-08	4.11E-07		2.00E+00			7.05E-10	2.71E-08
							TOTALS	0.000	0.006	7E-10	3E-08

CHILD RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

April 2012 Data

	Sediment Concentration		Noncarcinogenic IF		Carcinogenic IF		Chronic	Slope Factor	Hazard Quotient		Cancer Risk	
	RME	(mg/kg)	Average	RME	Average	RME	RfD		Average	RME	Average	RME
			(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	mg/kg - day	(mg/kg-d) ⁻¹				
PCBs												
1242	3.30E-02		7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		1.30E-04	1.04E-03		
1248	0.00E+00		7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		0.00E+00	0.00E+00		
Total PCBs	3.30E-02		7.86E-08	3.43E-06	9.43E-09	7.55E-08		2.00E+00			6.22E-10	4.98E-09
								TOTALS	0.000	0.001	6E-10	5E-09

CHILD RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

July 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		0.00E+00	0.00E+00		
1248	1.90E-02	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		8.47E-05	3.26E-03		
Total PCBs	1.90E-02	8.92E-08	3.43E-06	1.07E-08	4.11E-07		2.00E+00			4.07E-10	1.56E-08
							TOTALS	0.000	0.003	4E-10	2E-08

CHILD RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

July 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		0.00E+00	0.00E+00		
1248	1.90E-02	7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		7.47E-05	5.98E-04		
Total PCBs	1.90E-02	7.86E-08	3.43E-06	9.43E-09	7.55E-08		2.00E+00			3.58E-10	2.87E-09
							TOTALS	0.000	0.001	4E-10	3E-09

CHILD RECREATIONAL RECEPTOR HEALTH RISK : DERMAL CONTACT WITH SEDIMENTS

November 2012 Data

	Sediment Concentration RME (mg/kg)	Noncarcinogenic IF		Carcinogenic IF		Chronic RfD mg/kg - day	Slope Factor (mg/kg-d) ⁻¹	Hazard Quotient		Cancer Risk	
		Average (kg/kg-day)	RME (kg/kg-day)	Average (kg/kg-day)	RME (kg/kg-day)			Average	RME	Average	RME
		PCBs									
1242	0.00E+00	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		0.00E+00	0.00E+00		
1248	1.34E-01	8.92E-08	3.43E-06	1.07E-08	4.11E-07	2.00E-05		5.99E-04	2.30E-02		
Total PCBs	1.34E-01	8.92E-08	3.43E-06	1.07E-08	4.11E-07		2.00E+00			2.87E-09	1.10E-07
							TOTALS	0.001	0.023	3E-09	1E-07

CHILD RECREATIONAL RECEPTOR HEALTH RISK : INCIDENTAL INGESTION OF SEDIMENTS

November 2012 Data

	Sediment Concentration		Noncarcinogenic IF		Carcinogenic IF		Chronic	Slope Factor	Hazard Quotient		Cancer Risk	
	RME	(mg/kg)	Average	RME	Average	RME	RfD		Average	RME	Average	RME
			(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	(kg/kg-day)	mg/kg - day	(mg/kg-d) ⁻¹				
PCBs												
1242	0.00E+00		7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		0.00E+00	0.00E+00		
1248	1.34E-01		7.86E-08	6.29E-07	9.43E-09	7.55E-08	2.00E-05		5.28E-04	4.22E-03		
Total PCBs	1.34E-01		7.86E-08	3.43E-06	9.43E-09	7.55E-08		2.00E+00			2.53E-09	2.03E-08
								TOTALS	0.001	0.004	3E-09	2E-08